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RICARDO'S CRITICISMS OF ADAM SMITH

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THE object of the following dissertation is to examine Ricardo's criticisms of the economic doctrines of Adam Smith as set forth in the "Wealth of Nations," with a view to ascertaining to what extent those two celebrated economists actually differed in their conception and treatment of economic phenomena. The criticisms are first examined separately, the opinions of both writers on each particular point of dispute are briefly stated, and an attempt is made to account for the conflict of opinion. Finally the results thus obtained are considered and an endeavor made to formulate the principles underlying them.

The references to the "Wealth of Nations" are to the edition of that work edited by MacCulloch, 1863. Those to the "Principles of Political Economy and Taxation," to Professor Gonner's edition, 1903.

I. The Nature of Value

Adam Smith, as he himself suggests, was strangely conscious of the "extremely abstracted nature" of value, and his exhortation to patience and attention with which he ends the fourth chapter of the first book of his "Enquiry into the Nature and Causes of the Wealth of Nations" is neither misplaced nor uncalled for.

Paradoxical tho it may seem, it is not, however, value *qua* value which is so difficult to apprehend; rather is it "quantity of labor" — the "source" of value — that is enshrouded in mystery and proves so illusive to the understanding.

"The value of any commodity to the person who possesses it," writes Smith, "and who means not to use or consume it himself, but to exchange it for other commodities, is equal to the quantity of labor which it enables him to purchase or command." [1]

This statement is simple if "quantity of labor" were endowed with some distinctive connotation.

The term is therefore explained and it is evident that it conveyed to Smith ideas similar to those which it conveys to the modern economist. "Quantity of labor" is synonymous with "toil," "trouble" — in a word with "the disutility of labor."

Unfortunately, "it is often difficult to ascertain the proportion between two different [2] quantities of

[1] Wealth of Nations, Book I, chap. v, p. 13.

[2] Wealth of Nations, Book I, chap. v, p. 14.

labor"; moreover "every commodity is more frequently exchanged for, and thereby compared with, other commodities than with labor." Further "the greater part of people understand better what is meant by a quantity of a particular commodity than by a quantity of labor."

"Hence it comes to pass that the exchangeable value of every commodity is more frequently estimated by the quantity of money than by the quantity either of labor or of any other commodity, which can be had in exchange for it." [1]

But gold, the metal of the English monetary standard, fluctuates in value according as it is more or less difficult to obtain from the mines: wherefore it cannot be an accurate measure of the value of other commodities.

So far the issue is clear.

I. The value of a commodity is equal to the quantity of labor which it can purchase.

II. Labor is an unsuitable medium in which to express value. Gold is more frequently used than any other commodity for that purpose, tho it is not an invariable measure.

At this point Adam Smith states a somewhat startling proposition. "Equal quantities of labor at all times and places may be said to be of equal value to the laborer. The price which he (the laborer) pays must always be the same whatever may be the quantity of goods which he receives in return for it." [2] The pain, the trouble, in a word the disutility, involved in the work of say an agricultural laborer in the year 1600 is identical with that of the average Hodge in

[1] Wealth of Nations, Book I, Chap. v, p. 14.

[2] Wealth of Nations, Book I, chap. v, p. 15.

1776 or 1908. In general terms the proposition states that the disutility of labor (in any given grade) is constant. This remarkable assertion furnishes an excellent subject for debate; but so many and diverse are the conditions which determine the disutility of labor that it is well-nigh impossible to treat it with anything approaching scientific accuracy.

On this assumption, however, Smith lays it down that labor is an invariable standard of value. It is the "real" price of commodities; money is their nominal price only.

Adam Smith here turns from the laborer's view of labor, what may be termed the subjective view, to the employer's view of labor, or what may be termed the objective view. "Tho equal quantities of labor are always of equal value to the laborer, yet to the person who employs him, they appear sometimes to be of greater and sometimes of smaller value." [1] It is not, however, that labor alters in value: variations take place in the value of commodities. Because the laborer always "gives up" the same quantity of labor, when he gets much in return commodities are cheap, when little they are dear. To the laborer (and he is the all-important person to Smith), the value of labor is constant; that of other things varies. On the other hand, because the employer always obtains an equal quantity of labor from a given man in a given grade, when he gives little in return, labor is cheap, when much, labor is dear. To the employer, the value of labor varies, while other things remain constant.

The subject is further complicated by the introductions of a "nominal" and "real" price of labor "in this popular sense." The "real" price of labor consists in the necessaries and conveniences of life

[1] Wealth of Nations, Book I, chap. v, p. 15.

which are given for it; its "nominal" price in the quantity of money.

Value, then, according to Adam Smith has four different connotations according as it is considered from different points of view.

I. *From the Laborer's Standpoint:* —

A. The value of a commodity is equal to the quantity of labor which it "embodies."

II. *From the Employer's (or possessor's) Standpoint:* —

The value of a commodity is equal to —

A. The quantity of labor for which it will exchange.

B. The necessaries and conveniences of life for which it will exchange.

C. The amount of money for which it will exchange.

Smith unfortunately is not consistent in his use of these definitions. By "value" he sometimes means "real" value (I, A); sometimes "nominal value" (II, C); and he frequently confuses the quantity of labor "realized" in a commodity (I, A) with the quantity of labor that commodity will purchase in the market (II, A).

Ricardo's treatment of labor in relation to value, tho highly abstract, is much more definite, much more consistent.

Granted the possession of utility, every commodity has a "real" and an "exchange" value.

The "real" value of a commodity is equal to or is determined by, the quantity of labor, direct and indirect, "embodied" in it.

The "exchange" value of a commodity, except in the case of that which is the subject of a monopoly, is determined by its cost of production, *i. e.*, the ratio

of exchange of commodities is regulated by the amount of labor realized in them.

Labor according to this view obviously cannot have a "real" value, nor therefore, strictly speaking, an exchange value. Ricardo, however, does ascribe a value to labor. The value of labor is equal to the "*real*" *value* of the conveniences and necessaries consumed in its maintenance.

On this view of value and labor Ricardo bases all his subsequent speculation, and he adheres to it with great pertinacity.

Both Smith and Ricardo are at one in regarding labor as the "source" [1] of value, tho the latter is more accurate in taking cognizance of the economic effort exerted by indirect labor or capital. Ricardo, however, criticises Smith on five points. He maintains in opposition to Smith: —

A. That labor is not a standard measure of value.

B. That corn also varies in value and cannot be a standard measure.

C. That the term "riches" is not synonymous with "value."

D. That labor rises and falls in value not according as a greater or lesser quantity of the necessaries and conveniences of life are apportioned to labor, but according as a greater or less "real" value as realized in economic wealth is thus apportioned.

E. That a rise in the price of labor is not uniformly followed by a rise in the price of commodities.

[1] See Ricardo's Works, edited by MacCulloch, p. 461.

A. *Labor as a Measure of Value*

With regard to labor as a measure of value, it ought to be noted that Smith nowhere definitely states that the quantity of labor realized in a commodity is equal to the quantity of labor that commodity will purchase in the market. When he regarded labor as the real standard of value, he did so from the point of view of the laborer. He was looking at labor subjectively. "Sometimes," says Ricardo, "he (Adam Smith) speaks of corn, at other times of labor, as a standard measure, *not the quantity of labor bestowed on the production of any object*, but the quantity which it can command in the market."[1] Now it is just "this quantity of labor bestowed on the production of any object" that *is* Smith's standard measure. Because generally speaking for an average baker, it requires a given quantity of labor, say x, to produce a loaf of bread, no matter whether that loaf is sold for 3*d.* or 100*d.*, it is always of the same "real" value. Even if it were kept a week and became so stale as to be quite useless, it would still embody a quantity of labor and be of the same real price, tho its nominal price would have fallen to zero owing to absence of demand. In other words, "real" value (I, A, above) would have remained constant; the other values (II, A, B, and C) would have ceased to exist.

This, we take it, is all Smith really meant when he spoke of labor being a measure of value. He quite failed to see that value is essentially a social and not an individualistic conception,[2] and that relatively to a theory of value, the subjective view of labor is of little importance.

[1] Principles, p. 8.

[2] See Seligman's Principles of Economics, chap. xiii, p. 190.

This is not, however, the place to criticize Smith's theories in the light of modern science. Suffice it, then, to say that when Smith was specifically considering "labor" as an invariable measure of value, he did not attach to that term the meaning implied by Ricardo. Unfortunately, as has been already observed, Smith was very inconsistent in his use of the term value, and in later portions of his great work he does confound the quantity of labor realized in a commodity with the quantity of labor it will purchase in the market. In so far, then, as Smith makes this mistake, Ricardo's criticism is just and accurate.

B. *Corn as a Measure of Value*

Because a quantity of corn will not necessarily purchase the same quantity of labor as it embodies, corn equally with labor cannot be an invariable standard of value. "Equal quantities of corn will at distant times" says Smith, "be more nearly of the same 'real value,' or enable the possessor to purchase or command more nearly the same quantity of the labor of other people" — but "even equal quantities of corn will not do it exactly." [1]

Corn is not, then, a perfect standard even in the opinion of Smith. But it so nearly approaches thereto that in the "Wealth of Nations" it is very frequently assumed to be a perfect standard of value.

Smith obviously underestimated the divergence of corn from a standard — because a given amount of it "always feeds the same number of people." The only cause of divergence according to Adam Smith is to be found in the different conditions through which society passes in its progress to opulence or decadence,

[1] Wealth of Nations, Book I, chap. 5, p. 16.

and even then such divergence is not on account of a greater or lesser quantity of labor being necessary to the production of a given quantity of corn, but because of a greater or lesser quantity of corn being apportioned to labor. This peculiar view of the value of corn is always uppermost in Smith's mind and frequently taints his reasoning. In particular it modified unduly his opinions concerning rent and the effects of bounties on exportation.

Ricardo in emphasizing the fact that corn is subject to the same forces that produce variations in the value of other commodities, and that it must, therefore, vary in its own value, pointed out Smith's inconsistency, and corrected his bad logic in placing corn in a category by itself despite its possessing all the characteristics of an ordinary commodity.

C. *Value and Riches*

Smith's inconsistency in his use of the term "value" sometimes results in his confusing that term with "riches." Commodities possess great value where there is either scarcity or comparative difficulty in production. Riches imply plenty and ease in production. A reduction in value is therefore quite compatible with an increase of riches.

Adam Smith, in so far as he failed to distinguish in the applications of his own definitions of value, must, as a necessary consequence, have sometimes confused value and riches.

Again, Smith's "value" sometimes means "total utility." Neither economist had any conception of utility as the term is now understood in economic discussion and inquiry. To Smith it meant usefulness; to Ricardo, capacity to satisfy man's more pressing needs. Much less did either realize the doctrine of

marginal utility, and the relation between marginal utility and marginal cost, tho Ricardo did see that it was production carried on under the most disadvantageous circumstances that regulated the value of commodities. Still it can scarcely be contended that Smith did not, in his own mind, distinguish between economic value and the more general interpretation of wealth in the sense of riches. So elementary and fundamental a conception could not have altogether escaped him. But, as has been remarked, he was lax and unscientific in his use of terms, more particularly when the context, as in his later discussions, is sufficiently clear to reveal quite naturally and unmistakably the point to which he wished to draw the attention of his readers. On the other hand, Ricardo did not make adequate allowance for the difference between his own abstract theory of "real" value and the theories of Smith.

D. *"Real" Wages: Alterations in the Wage-rate*

Ricardo's theory of remuneration led him to ascribe a quite different connotation to a "rise" or a "fall" in the wages of labor from that adopted by Smith.

To the former a "rise" or "fall" in wages meant more or less *real value* as realized in necessaries and conveniences: to the mind of the latter the expressions conveyed one meaning and one only, *viz.*, more or less of the necessaries and conveniences of life.

An alteration in wages, therefore, which in Ricardo would be described as a rise, might in Smith appear as a fall if owing to greater difficulty in production, less necessaries and conveniences represented a much greater value than formerly. Moreover both wage earners and profit earners might receive a greater quantity of riches, while at the same time the wage-

rate might have decreased and the profit rate increased, or *vice versa*.

Where, then, there is apparently a difference of opinion between the two economists regarding movements in wages it is generally only apparent and not real. Both agreed that the "nominal" wages of labor consisted in the amount of money the laborer received. But while Ricardo (who turned his face to the abstract treatment of economic phenomena, and regarded the problems of distribution as being essentially concerned with rates) considered the real wages of labor to be the proportion of *real value*, as realized in commodities, which the nominal wages of labor enabled the laborer to purchase; Adam Smith (who, as the object of his great work would suggest, concentrated his attention on the more obvious conditions of mankind) regarded "real" wages as being simply and solely the actual amount of necessaries and conveniences over which the nominal wages of labor gave the laborer power. Ricardo did not observe this important difference in definition and so argues as if the term "real wages" had the same connotation in the "Wealth of Nations" as he ascribed to it in his "Principles."

E. *Alterations in the Wage-Rate in Relation to Price*

According to Ricardo the prices of all commodities can rise only by reason of a fall in the value of the circulating medium. The main cause of variation in the value of any single commodity, however, is to be found in the changing quantities of labor, direct and indirect, which that commodity from time to time "realizes." In other words a commodity can only permanently rise or fall in exchange value relatively to other commodities by reason of an increase or decrease in the real value of that commodity.

It follows, therefore, that, other things being equal, if the nominal wages of labor rise and a greater real value is appropriated by the laborer, since no greater quantity of labor is exerted in production, the prices of commodities remain as they were before the alteration in wages. Hence, the same real value being produced, if a greater amount is given to labor a correspondingly smaller amount remains for the owners of capital. In other words, when wages rise profits fall, and only in so far as this latter circumstance affects the supply of capital (or indirect labor) will the price of commodities rise or fall. Fundamentally then, in the theory of Ricardo, variations in the rates of remuneration do not in themselves affect price.

According to Smith the "natural" price of a commodity was made up of a "natural" rate of wages, a "natural" rate of profits and a "natural" rate of rent.[1] If, therefore, the amount paid to labor increased, price tended to be increased by a corresponding amount. Smith did not realize the connection between profits and wages, and tho he speaks of a "rate" of profits and a "rate" of wages, it is doubtful whether he quite comprehended the full import of his own terminology. Consequently he did not fully understand that the rates of profits and wages are complementary the one to the other; that as the one rises the other falls by the same amount. True, in Smith, a rise in the wages of labor is attended by a fall in profits. But this latter phenomenon only arises indirectly through the former bringing about a more intensified competition among capitalists, whilst in Ricardo the fall in profits is inevitable and simultaneous with the rise in wages.

[1] This latter doctrine of natural value is plainly incompatible with Smith's former doctrine of value based on labor (see below).

II. The Productivity of Different Kinds of Labor

Tho Adam Smith did not accept the whole of the Physiocratic doctrine of the extreme importance of Agriculture, he did believe, as his opinions on the value of corn testify, that agriculture was, for certain peculiar reasons, the most profitable of employments. Those peculiar reasons centre round the fact that in agricultural pursuits nature works along with man; in manufacture " nature does nothing."

Adam Smith, it is plain, did not realize the exact nature of economic labor in spite of the importance which he attached to it. He did not see that labor, as is so clearly demonstrated by J. S. Mill, consists in moving things, in submitting them to the forces of nature, and that natural forces are at the service of, and are utilized by, the manufacturer as well as by the agriculturist. Further, economic wealth conveyed to his mind the idea of matter in a particular form; he quite failed to see that the process of production is not completed until commodities are also in a particular place at a particular time, — in short, that economic effort is engaged in producing utilities.

Again, the phenomenon of growth as manifested in agriculture seemed to have no counterpart in manufacture. Without discussing the difficult biological conception of growth, it is sufficient in order to refute Smith's contention, to show that the economic labor of the farmer is in essence identical with that of the factory hand. Both are engaged in submitting matter to the forces of nature. True, those forces are different in the two occupations; nevertheless they are natural, and labor consists in bringing matter and natural forces into contact.

Ricardo, tho he did not probe the subject so deeply as Mill, was alive to the inaccuracy of Smith's statement, and in differing from the latter on this point brings sufficient evidence forward to justify his criticism.

Still an early surveyor of the field of economic phenomena as it presented itself to the economist in the middle of the eighteenth century might, we suggest, be likely to exaggerate, as Smith did, the assistance given by nature to the agriculturist in his labor.

In the first place, to the cursory eye it does appear that nature labors far more than man in the production of raw produce. Man prepares the ground and sows the seed; but nature gives the increase. Between seedtime and harvest man does little or nothing. Moreover a manufacturer does not turn out any more matter in the shape of finished goods than he received in the form of raw produce. As has been observed there is no phenomenon in manufacture quite analogous to that of growth in agriculture. And we are of the opinion that in the passage under discussion, it is this conception of "growth" that Adam Smith wished to emphasize. Elsewhere [1] he is more pointed and unmistakably confirms this view. On the other hand, it is equally tenable that Smith's opinions were tainted by his classical learning and his contact with the physiocrats.

In the second place it would not appear so obvious to Smith that nature works in manufacture. In the evidence which Ricardo brings forward in contradiction

[1] Wealth of Nations, Book V, chap. i, p. 313. "Tho a husbandman should be employed in an expedition, provided it begins after seedtime and ends before harvest, the interruption of his business will not always occasion any considerable diminution of his revenue. Without the intervention of his labor, nature does herself the greater part of the work which remains to be done. But the moment that an artificer, a smith, a carpenter, or a weaver quits his work-house, the sole source of his revenue is completely dried up. Nature does nothing for him. He does all for himself."

of Smith's assertion, mention is made of the steam engine. But steam of course was not generally applied in industry till some years after the publication of the "Wealth of Nations." In the middle of the eighteenth century man did work directly on matter and not, as in Ricardo's time, indirectly by regulating nature's forces.

In this connection it might be pointed out that Smith also regarded the work of soldiers, servants, and the like, as "unproductive" in character, on the ground that their wages were paid out of revenue and not out of capital. Since Ricardo held the same opinion, he does not criticize this teaching, equally erroneous tho it be.

III. Rent

A. *The Rent of Land*

Adam Smith did see, tho not with great clearness, that rent "entered into the price of commodities in a different way from wages and profits. High or low wages and profits," he says, "are the causes of high or low price; high or low rent is the effect of it. It is because high or low wages and profits must be paid in order to bring a particular commodity to market, that its price is high or low. But it is because its price is high or low, a great deal more or very little more or no more than what is sufficient to pay those wages and profits, that it affords a high rent, or a low rent, or no rent at all." [1]

From this quotation it is apparent that Smith had some idea of the true nature of rent. In discussing the rent of mines he enunciates the "whole principle" of rent, to the satisfaction even of his keen critic.[2]

[1] Wealth of Nations, Book I, chap. xi, p. 67.

[2] Ricardo's Principles, p. 316.

It is, however, extremely doubtful whether Adam Smith had any real conception of the marginal use of land or of capital applied in either agriculture or manufacture. Tho he vaguely felt that price regulates rent and not rent price, he did not clearly see why it was so. The differential nature of rent escaped him. Had it been otherwise he would not have argued that the rent of land is in proportion to its absolute and not to its relative fertility. Nor would he have contended that corn lands always afford rent had he perceived that it is production carried on under the most unfavorable circumstances that regulates the price both of corn and all commodities. In his treatment of the rent of land it is unquestionable that Smith was led astray by his conception of the stable value of corn. Moreover he entirely overlooked the fact that agricultural production is sooner or later carried on under the action of the law of diminishing return.

That corn lands always afford rent Ricardo curtly denies. On the contrary he maintains that there is in every country land of such a quality that it cannot yield a produce more than sufficiently valuable to replace the stock employed upon it together with the profits ordinary and usual in that country. But setting that contention aside he rightly claims that "it is the same thing if there be *any capital* employed in Great Britain on land which yields only the return of stock, with its ordinary profits, whether it be employed on old or on new land." [1] This by a theoretical argument he judges to be the case. To say that capital is applied in agriculture up to the margin is to state a truism. A most unenterprising farmer would be he who did not use as much capital as he profitably could in the cultivation of his lands.

[1] Principles, p. 314.

Ricardo proceeds to discuss Smith's distinction between the law which regulates the rent of land and that which regulates the rent of mines. Whereas in the one case rent is in proportion to the relative fertility of the mine, in the other case, says Smith, it is in proportion to the absolute fertility of the earth. Ricardo shows, however, that even if all land paid rent, the difference in amount paid by the best land from that paid by the worst land would be in proportion to their relative and not to their absolute fertility. And this is quite true for fertility itself is a relative term.[1]

With regard to the rent of mines Ricardo disputes Smith's assertion that the most fertile mine regulates the price of coal in any given neighborhood, contending, on the contrary, that the least fertile source of produce, as in the case of land, regulates price. The difference here between the two economists is really very slight. Adam Smith did hold that the price of coal was practically identical with the cost of production in the least fertile mine actually being worked,[2] whilst Ricardo would scarcely have disputed the influence of the supply from the richer mines in determining which mine was to be the marginal mine.[3] The truth appears to be that the product of the larger and more fertile mine does influence supply very considerably and therefore affects price. At the same time cost of production in the least fertile mine may rightly be claimed to be the index of price at any given time.

It ought further to be remembered that a portion of the payment tendered for the use of a mine is made

[1] "There is no absolute measure of the richness or fertility of the land," Marshall's Principles, vol. i, Book IV, chap. iii, p. 157.

[2] Wealth of Nations, Book I, chap. xi, p. 77.

[3] Principles, p. 317.

on account of the depreciation in the value of the land that ensues from mining operations. This fact both economists neglect.

Again, Ricardo criticizes Smith on the point as to whether the rent of the landlord would be increased by a diminished cost of production. Adam Smith, failing to perceive the application of the doctrine of the margin, — that rent can only be affected by influencing marginal production, — claims that under the specified change, the proportion set aside for rent would rise. Ricardo admits this if regard be had to the permanent and ultimate results, but that the temporary and immediate effect would be a great fall in rent. He argues that population would increase, that resort would have to be had to inferior land, and ultimately price and rent would rise. But, emphasizing the fact that rent varies according to relative and not absolute fertility, he claims it would immediately fall by any innovation that led to a diminished cost of production.[1]

Hence he concludes that, generally speaking, the interests of the landlords are at variance with those of the consumer and the manufacturer. Adam Smith expresses the contrary opinion through confusing a high value of money with a low value of corn. Smith maintains that if, owing to importation, the value of corn fell, tho the landlord would get less money in rent, that lesser quantity would purchase a greater number of commodities and a greater quantity of labor than before. Their real wealth, he affirms, would remain the same. This statement, of course, is incorrect and is another instance of Smith's habit of

[1] This, of course, is true, providing, as Ricardo assumes, the improvement is general, *i. e.*, that it affects all agricultural land. See Marshall's Principles, Append. L., p. 835.

regarding the value of corn as a standard. Ricardo's contention that an abundance or scarcity of the precious metals affects all prices alike, whereas an increase or decrease in the value of corn affects only the relative value of corn, is a perfectly valid one.

Ricardo's criticisms of Smith on rent may then be attributed to the following circumstances.

In the first place Smith had no fixed conception of price being regulated by that production which is undertaken under the most disadvantageous circumstances, and that differences in rent therefore arise on account of differences in the conditions under which production is carried on. Hence he contended that all corn lands pay rent. He did not understand that the doctrine of the margin also applies to the employment of *capital* in production, and that land itself may be regarded as a particular form of capital. Ricardo had attained to this knowledge. His theory of rent was important in that it proved that rent did not form a component part of price. He eliminated rent from his theory of value. To Smith there was a "natural" rate of rent just as there was a natural rate of profits and wages, and this "natural rate" of rent formed part of natural value. In other words, as has been noted, Smith really made no distinction in his economic reasoning between marginal and intra-marginal production.

Secondly, unlike Ricardo, Smith did not recognize the action of the law of diminishing return in agriculture. Hence he did not perceive that increased cost of production would eventually result from a more intensive cultivation of old land, or a more extensive cultivation by resort being made to new and inferior soils.

In the third place Smith frequently adopts corn as

a standard of value. This Ricardo never does, maintaining with truth that political economy knows of no commodity that possesses all the characteristics essential to an invariable standard.

B. *On the Comparative Value of Gold, Corn, and Labor in Rich and Poor Countries*

Adam Smith divides his treatment of rent into three parts.

First, he discourses on the rent of that land which always pays rent. Such are corn lands, *i. e.*, those which furnish us with our food supply.

Secondly, there are the lands which supply the raw produce out of which we satisfy our secondary needs — clothing, shelter, and the like. These lands sometimes do and sometimes do not afford rent.

Thirdly, Smith traces the variations in the ratios of exchange of these two classes of commodities as a nation progresses in opulence, and after a lengthy historical inquiry into the changes that took place in the value of silver from the fourteenth to the eighteenth century, concludes that, as a nation progresses in wealth, the value of those commodities belonging to Class II rises relatively to those of Class I. His contention, then, is that as a nation advances to opulence, luxuries and conveniences tend to rise in value as compared with necessaries.

Ricardo in Chapter XXVIII of his "Principles," on the "Comparative Value of Gold, Corn, and Labor in Rich and Poor Countries," enunciates the contrary proposition, that gold is cheaper relatively to corn in a rich than it is in a poor country; that as a nation grows richer it becomes, more and more, increasingly

difficult to obtain the food supply, and that consequently corn tends to rise in value relatively to other things. In a word, agriculture is carried on according to the law of diminishing return, while in manufacture no such law operates.[1] His argument is chiefly composed of somewhat disconnected attacks on certain passages from Smith's "Digression on the Value of Silver," which Ricardo isolates from their context, and generally construes in a sense different from that intended by their author.

This latter consideration effectually accounts for the differences of opinion between the two economists on matters of detail.

It has been suggested, however, that Ricardo failed to grasp the particular object of Adam Smith's argument.[2] And if his blunders in the above mentioned chapter are taken as a guide, the opinion is well founded. It is at least possible, however, that he not only comprehended the drift of Smith's digression on the value of silver, but in addition attempted to controvert the conclusion therein set forth. How else can one account for the brief expression he gives of Smith's opinion and his own opposing one, in the following sentence. "I have endeavored to show," he says, "that it (the value of gold) will be low in rich countries and high in poor countries; Adam Smith is of a different opinion; he thinks that the value of gold estimated in corn is highest in rich countries."[3]

[1] We are aware that this statement is not strictly true, and that it is not found in Ricardo. Both the laws of diminishing and increasing return operate in agriculture and manufacture; but, whereas in the former the balance is in favor of the law of D.R., in the latter it is in favor of the law of I.R. While Smith tacitly assumed both agriculture and manufacture to be carried on according to the law of constant return, Ricardo tacitly assumed that law to operate in manufacture only.

[2] Principles, footnote, p. 366.

[3] Principles, p. 267.

As for the diametrically opposite conclusions at which the economists arrived, that is readily explained when the assumptions underlying the discussion are considered. Again one finds a good example of how one term conveyed to the mind of each writer a very different connotation.

In Adam Smith's writings, a rich and opulent country is one which has a plentiful supply of the necessaries, conveniences, and luxuries of life; one, that is, in which there is essentially a plentiful supply of subsistence. In Ricardo, on the other hand, a rich country is one which is very populous, whose lands are being more and more intensively cultivated to meet the ever growing demand for food, and where subsistence tends to become dearer and dearer.

Again, Adam Smith failed to observe the action of the law of diminishing return in agriculture; but he was alive to the importance of importation, tho he rightly considered that cost of transport and insurance would tend to render corn dear in the importing country. Ricardo, on the contrary, laid perhaps undue stress on the law of diminishing return, and tended, in this and like discussions, to minimize the importance of the importation of food from foreign territories. If, of course, permanent and ultimate conditions be considered, assuming that is, that all lands possibly available are being worked according to the law of diminishing return, there is much truth in Ricardo's argument.

Adam Smith's view of the stable value of corn over long periods is important in this connection, since it further helps to account for the difference between his own and Ricardo's opinion on this subject. Corn, he holds, remains constant because population or demand for corn is regulated by the supply of corn. The one

therefore tends to balance the other. To Ricardo, as a country becomes richer, corn inevitably becomes dearer and dearer owing to the action of the law of diminishing return.

IV. Profits

A. *The Relation between Profits, Wages, and Capital*

Ricardo's criticism of Adam Smith's doctrines concerning profits in relation to capital may be conveniently divided into two parts.

In the first place there is the question of the effect on profits of the accumulation of capital, with which, of course, is involved a consideration of the relationship between profits, capital, and wages.

Secondly, there arises the inquiry as to how far alterations in the market rate of interest can be regarded as indicating like alterations in the rate of profits.

With regard to the accumulation of capital Adam Smith's teaching may be briefly summarized. In relation to the earlier social stage we need consider nothing but the amount of labor employed in the production of an article as determining its exchange value, but in more advanced periods price is complex, and consists in the most general case of three elements, — wages, profits, and rent. Wages are the reward of labor. Profit arises as soon as stock, being accumulated in the hands of one person, is employed by him in setting others to work, and supplying them with subsistence and materials in order to make a gain by what they produce. Profits depend in the main on the amount of capital employed, altho the rate of profits alters with the increasing, stationary, or declining state of society. The increase of stock, since it

involves competition among capitalists for labor, raises wages and lowers profits. Conversely, a diminution in the amount of stock lowers wages and raises profits.

In Book III of the "Wealth of Nations" Adam Smith outlines what he conceives to be the natural progress of a nation in opulence. In the earlier stages, agriculture is the only or chief occupation; next small towns begin to arise and with them appears the growth of manufacture and a home trade between the country and the towns highly beneficial to both sets of producers. Finally, capital "overflows" into a foreign trade of consumption, or an international carrying trade. Agriculture is a more productive occupation than manufacture, and manufacture than the carrying trade. Capital, then, is only employed in a carrying trade because it exists in such quantity that a part of it cannot be profitably employed in agriculture, manufacture, or the home trade.

To both of these conclusions, namely: —

(1) That as capital accumulates profits tend to fall, and

(2) That capital "overflows" into the carrying trade, Ricardo urges objections. He holds the contrary opinions: —

I. That profits cannot fall except by reason of a rise in wages, and wages cannot rise unless the necessaries and conveniences of life which support labor rise in "real" value, *i. e.*, unless a greater "real" value is paid to labor.

II. That capital is engaged in the carrying trade because certain "conveniences and ornaments of life" can be better obtained in that way

than by home manufacture or cultivation, and not because the said capital cannot be profitably employed at home.

With regard to the first of these propositions, Ricardo's theory is that the accumulation of capital gives rise to an increase in population which involves an increased demand for food. As additional food is only procured at greater cost, wages rise and profits fall. The cause, therefore, of the fall in profits is the increase in wages due, not to the competition of capitalists in their search for labor as suggested by Smith, but to the increased cost of food.

Ricardo admits Smith's conclusion if regard be had to the short period; but since both economists were considering ultimate and permanent conditions the difference of opinion remains. It can only be satisfactorily explained by a consideration of the assumptions underlying the arguments.

A. Ricardo takes it for granted that an increase of capital leads to an increase in population. He neglects any possible rise in the standard of comfort.[1] Smith, tho in a former part of his work he acknowledges "that the demand for men necessarily regulates the supply of men, quickens it when it goes on too slowly, and stops it when it advances too fast,"[2] entirely overlooks this doctrine in discussing the problem under review.

B. Ricardo postulates the law of diminishing return in agriculture. Increase of population means a need for an increased food supply and this, on account of the operation of the fore-

[1] Ricardo elsewhere acknowledges the possibility and desirability of a rise in the standard of comfort, consequent on an increase of capital. See Principles, p. 74.

[2] Wealth of Nations, Book I, chap. 8, p. 36.

going law, can only be obtained at increased cost. Adam Smith recognizes no such law, and consequently no such alteration in the price of food as the action of that law tends to bring about. Had the latter then been quite consistent he would have argued that accumulation of capital leads to increased population, and tho wages will temporarily rise, they will ultimately fall again to their former level. The difference of opinion, then, would have been attributable to Ricardo's recognition of the law of diminishing return and Smith's neglect of it.

The second proposition is based on Ricardo's valid contention that there can be no limit to demand for luxuries, nor therefore to the profitable employment of capital in producing such luxuries. Adam Smith, tho he elsewhere [1] refers to the illimitable nature of demand, inconsistently neglects such a consideration in discussing capital in relation to the carrying trade. It is not improbable that his *a priori* assumption of the right or "natural" order of things prejudiced his opinion on the subject of profits tending to a minimum with the progress of opulence, and the possibility of a redundancy of capital. On the other hand, Smith frequently catches glimpses of great economic truths, of which, however, he conceives neither the full meaning nor the real importance. The identity of production and consumption would seem to furnish a good example of this pardonable weakness. The possibility of a general over-production with which the problem under discussion is intimately connected, is a question that has puzzled many economists. Still we are inclined to agree with Ricardo, that as there

[1] Wealth of Nations, Book I, chap. xi, pp. 75–76.

is no limit to demand, there can be no limit to the profitable employment of capital, and that therefore "when merchants engage their capitals in foreign trade or in the carrying trade, it is always from choice and never from necessity." [1]

B. *Profits and Interest*

Tho Adam Smith recognized that profits were composed of certain elements, he did not enter into a discussion of the different forces which govern those several elements. Hence his treatment is very general and inconclusive.

On the bald assertion that "wherever a great deal can be made by the use of money a great deal will commonly be given for the use of it, and that wherever little can be made by it less will commonly be given for it," [2] he attempts to trace the alterations that have taken place in the rate of interest from the time of Henry VIII. His conclusion, based on the assumption that the legal rate followed and did not precede the market rate of interest, is that the legal rate having gradually fallen, the rate of profits must have fallen also. This result is in agreement with his opinion on the effects of the accumulation of capital on the rate of profits.

Ricardo, tho his treatment of profits is as unanalytical as Smith's, refuses to accept the latter's assumption that the legal rate of interest is a guide to the rate of profits. He virtually denies that the legal rate followed the market rate, and maintains that, tho this latter rate would be more reliable than the former, it is unfortunately not procurable. The legal

[1] Ricardo's Principles, p. 277.

[2] Wealth of Nations, Book I, chap. ix, p. 40.

rate of interest, he holds, is of little value, since it was to a large extent inoperative owing to the ease of evasion.

The market rate of interest is, generally speaking, governed by the rate of profits. While Ricardo affirms this, he holds that "the market rate of interest is subject to temporary variations from other causes"[1] than those which affect the general rate of profits. For instance, when price falls from an abundant supply, the rate of interest tends to rise owing to credit operations.[2] Again, funded property cannot be regarded as a steady criterion of the rate of interest.[3] Moreover, government pays different rates for different securities.[4]

Ricardo then advances a little beyond Smith in showing that the rate of interest is only an element in the general rate of profits, and that the former is subject to forces which do not operate on the latter. Apart from this consideration, however, there is little importance in the discussion. Ricardo's greater knowledge of actual business affairs and of financial matters in particular probably led him nearer the truth than Smith.

V. Bounties

Adam Smith objects to bounties on exportation and high duties on importation on the following grounds:—

1. They force trade into less advantageous channels than it would otherwise enter.
2. They force trade into positively disadvantageous channels because trades receiving bounties are necessarily losing ones.

[1] Principles, p. 282.
[2] Principles, pp. 282–283.
[3] Principles, pp. 282–283.
[4] Principles, pp. 282–283.

3. They do not encourage the production of corn because only the nominal price of corn is raised, and not its "real" price, and as this results in a rise in wages, all commodities are equally raised in price.
4. By lowering the value of silver all industry is depressed and foreign competition invited.
5. Instead, therefore, of advancing they retard the cultivation of land.

With the first and second of these objections Ricardo cordially agrees. He, however, takes exception to the third, fourth, and fifth.

In the first place, with regard to objection number three, he denies that the money price of corn regulates wages and through them, the price of all commodities. On the other hand, he affirms that the "real," and therefore the exchange, value of corn would rise, not only temporarily from increased demand, but permanently owing to the increased demand being supplied by the cultivation of inferior soils. Contrary to Smith, then, Ricardo is of opinion that bounties would benefit farmers and landlords much more than manufacturers, since corn would sell at a permanently higher price, whilst manufactured goods would be only temporarily raised in price. Again, he maintains that even if wages did rise, this would not lead to a rise in the price of commodities, but rather to a fall in the rate of profits.

Secondly, with regard to objection number four, Ricardo contends there cannot be permanently a high price on all commodities owing to foreign competition.

Thirdly, since there would be a permanent rise in the price of corn, the cultivation of land would be advanced and not retarded, owing to the increase in rent and the consequent increase of capital devoted to agricultural pursuits.

These opinions of Ricardo are undoubtedly the correct ones. They are, one can quite well see, the result of the application of a clear-cut if not elaborate theory to the solution of an economic problem. The dissimilar views at which Smith and Ricardo arrived are mainly owing to three considerations.

I. In the first place Adam Smith's conception of the value of corn together with his neglect of the operation of the law of diminishing return in agriculture prevented him from seeing that the "real" as well as the "nominal" price of corn would rise from an increase in the demand for corn. He denied, of course, that a bounty on the exportation of corn did lead to an increase in demand, since he held that what increase might result from the foreign trade in that commodity, was wholly at the expense of the home market. This argument Ricardo neglects, tho be it said it affects little the ultimate considerations of the effects of a bounty. For it should be remembered that the demand for corn is inelastic. Therefore an increase in the foreign trade in corn would lead to a greater total demand rather than to an increase in the proportion of foreign to home demand.

II. Secondly, Ricardo's theory of value led him to distinguish carefully between alterations in the rates of remuneration and alterations in price. There is really no connection between the former and the latter. With this consideration clearly understood and ever in mind Ricardo was always on the alert to bring to light the occasions on which Smith's less fixed and less consistent theory of value led him to assert or imply the contrary proposition.

III. In the third place, Ricardo invariably fixed his attention on permanent and ultimate conditions. He always "pushed" his theories as far as they would go. His neglect of the temporary and accidental reached in some cases, it may be contended, to the point of error. Smith as frequently considers the temporary as the permanent. In his discussion on bounties he sometimes postulates the former, sometimes the latter, and invariably he has in mind what he considers to have been the effects of bounties in the past. Even when he does consider permanent conditions it is doubtful whether he went as far as Ricardo in his conception of the ultimate. While he saw for example that a reduction in the value of silver led to increased prices, and therefore offered an invitation to foreign competition, he did not trace further the effect of the acceptance of this invitation in the subsequent relevelling of prices.

VI. Taxation

A. *The Tax Fund. Gross and Net Revenue*

Smith holds that "the riches and so far as power depends on riches, the power of every country must always be in proportion to the value of its annual produce, the fund from which all taxes must ultimately be paid." [1]

Ricardo rightly argues that it is the net revenue and not the gross revenue that is the all important fund, out of which taxes are paid. Theoretically the net revenue of a society *is* the main consideration in

[1] Wealth of Nations, Book II, chap. v, p. 166.

discussing the fund on which taxes ought to fall. It is not a good and profitable expedient to tax capital.

It ought to be noted that Ricardo, as he himself suggests, is conscious of the advantage of a large population, even if no more net revenue were produced by it than by a smaller population. But "it is not on the grounds of any supposed advantage accruing from a large population, or of the happiness that may be enjoyed by a greater number of human beings, that Adam Smith supports the preference of that employment of capital which gives motion to the greatest quantity of industry, but expressly on the ground of its increasing the power of the country." [1] This error on the part of Smith in gauging the ability of a country to pay taxes by the amount of gross revenue arises from his erroneous opinion that the wealth of a country depends on the quantity of productive labor employed and that certain occupations employ more productive labor than others.

Ricardo does not definitely attack this position tho he does not grant it. He merely denies the relevancy of the argument so far as the tax-fund or power of the nation is concerned.

B. *The Incidence of a Tax on the Produce of Land*

Taxes on rent fall altogether on the landlord. Taxes on the produce of land are, according to Smith, in reality taxes on rent and are, therefore, also paid by the landlord.

Ricardo agrees that a tax on rent falls on the landlord, but he holds the contrary opinion regarding taxes on the produce of land. Taxes on raw produce, he maintains, are not similar in their incidence to taxes

[1] Principles, p. 337.

on rent. A tax on raw produce increases the price of raw produce and falls on the consumer.

Ricardo ever had in mind the theory that the forces which determine the value of a commodity, particularly of an agricultural commodity, must be studied at the margin. Hence, he saw clearly that a tax on raw produce, since it really is an addition to cost of production at the margin, *i. e.*, on the land that pays no rent, must inevitably increase price.

Smith in so far as he failed to distinguish between marginal and intramarginal production must, as a necessary consequence, have failed to trace accurately the incidence of a tax on the produce of land.

The difference of opinion, then, regarding the incidence of such a tax is entirely due to Ricardo's insistence on the doctrine of the margin and to Smith's neglect of it. Curiously enough Smith's reasoning on the incidence of a tax on malt is entirely in accord with Ricardo's view of taxes on *all* raw produce.

C. *Taxes on Wages and Necessaries*

Ricardo's teaching in brief is that a general tax on wages raises wages and lowers profits. It is similar to a tax on necessaries in that it raises wages. But whereas a tax on necessaries increases the price of necessaries and is paid partly by the receivers of profits and in part by the rich consumer, the former tax falls wholly on the receivers of profits.

Adam Smith is in agreement that a tax on wages raises wages. But, contrary to Ricardo, he holds the view that as a result of the rise in wages, the price of manufactured articles rises and the tax is shifted to the consumer, while in agriculture the rent of the landlord tends to fall.

The additional wages paid by manufacturers will occasion a rise in the price of manufactured goods, and will therefore fall on the consumers of those commodities; the additional wages paid by farmers will ultimately fall on the landlords who will receive a diminished rent. Smith also holds that a tax on necessaries is virtually a tax on wages and has the same incidence. He therefore condemns taxes on wages and necessaries.

Ricardo himself hits on the main cause of difference between his own opinions and those of Smith. He points out that Smith, as has been already stated, overlooked the fact that there is capital employed on land which does not yield rent, and that it is the cost of production on the land which does not yield rent that regulates price. Hence, of course, a tax on wages could not fall on rent. A tax on necessaries could only fall on rent in so far as the receiver of rent consumed necessaries. It would also fall on the receiver of profits both in so far as he consumed necessaries, and, in addition, in so far as it raised wages. Similarly a tax on wages falls entirely on the profits of stock. "It does not entitle the master manufacturer to charge it with a profit on the price of his goods, for he will be unable to increase their price and therefore he must wholly and without compensation pay such a tax." [1]

This criticism, then, can be attributed to two circumstances: —

> First, it is under the conditions that govern marginal cultivation that the labor which regulates price is carried on. Ricardo, tho he never uses the terms "margin" and "marginal," yet always entertains fixed ideas, very similar to those which the said terms suggest to the

[1] Ricardo's Principles, p. 209.

modern economist. More particularly is this true when he is considering problems connected with the cultivation of land. Adam Smith had no such fixed conception.

Secondly, Ricardo was strict in his adherence to the doctrine that the rates of remuneration have no real connection with price. It is because he saw this so clearly that he refused to identify himself with Smith's outcry against taxes on wages and necessaries, and was personally indifferent as to which tax the government might be pleased to impose. [1]

VII. Colonial and Foreign Trade

Adam Smith's teaching under the heading of "Treaties of Commerce" may be briefly summarized. Treaties of Commerce were arranged in order to enable a country to sell more than it could buy, and thus to secure a favorable balance of trade. They are disadvantageous to the favoring country and advantageous to the favored country. The Methuen Treaty by which reciprocity was established between England and Portugal in wine and woollens is set forth, and is held to substantiate this opinion.

Ricardo in part accepts Smith's conclusions, and by substituting England and a colony in the place of Portugal and England, he contends that a mother country can be benefited at the expense of a colony.

This is the opposite of Smith's doctrine, who maintains that a monopoly of the colonial trade leads to high profits in that branch of trade, that more and more capital is attracted to it, and that profits tend

[1] It should be noted that for the sake of argument Ricardo practically assumes the wages of labor to be at the "physiological minimum," and thus unable to bear any reduction.

to rise in all branches of British trade. Prices consequently rise and the foreign competitor has an advantage in those trades in which England does not possess a monopoly.

Ricardo, of course, holds this reasoning to be fallacious since, ever true to his theory of remuneration, he affirms that far from high profits being a cause of high price they do not affect price at all. He does, however, allow that there will be a worse distribution of the general capital and industry, and, owing to diminished supply, the prices of commodities will be raised. At the same time no change from one foreign trade to another, or from a home to a foreign trade can affect the rate of profits.[1] Once again do we find the more exact and scientific theory of remuneration as taught by Ricardo leading him to differ from Smith.

Again, Smith held that the value of a foreign trade to a country was inferior to that of a home trade because equal capitals would employ a less amount of productive labor in the former than in the latter. The element of time, too, was important. The longer period during which the capital was returned in foreign as compared with home trade further rendered foreign trade a less productive form of economic activity.

Ricardo did not accept this view. He held that tho only one capital instead of two capitals might be replaced by a foreign trade, the replaced capital would be equal in amount to the two capitals which would have been employed at home in the work of exchanging had no foreign trade been engaged in at all. The amount of productive labor employed, however, cannot be a criterion of the value of foreign trade. The important consideration is whether wants are satisfied or not. But without discussing further this question

[1] Principles, p. 332.

we believe Ricardo's objection to be a valid one. Just as Smith erred in his treatment of the varied forms of economic activity as exhibited in agriculture and manufacture, the retail and the carrying trade, by erecting the standard of "productive labor employed," in like manner did he fall into error in his discourse on foreign trade.

Finally, Ricardo's whole conception of foreign trade is more advanced than Smith's. The former was probably the earliest theorist to state the doctrine that comparative costs lie at the root of international trade. Furthermore, he insisted that if prices rose generally in a country, this would not alter the ratios in which commodities would exchange with one another. Money itself being the only commodity affected, its comparative cost having fallen, its exportation would follow until such time as the currency was restored to its normal value. Smith had no conception of the doctrine of comparative costs, nor did he fully appreciate, nor always allow for, the effects on price of a foreign trade in bullion.

VIII. Summary and Conclusion

We have examined Ricardo's criticisms of Adam Smith. The views of each writer on the matters of dispute, or apparent dispute, have been briefly set forth, and an attempt has been made in each case to account for the difference of opinion. It now remains to reduce to a few principles the results at which we have arrived.

And at the outset let it be said that tho much of what Ricardo says with regard to the subjects on which he differs from Adam Smith is true, there are instances in which either a more thoro study of the

context, or a more liberal interpretation, would have rendered his observations unnecessary. He did not, for example, read with sufficient care Smith's confusing pages on labor. Had he done so he would have stated the latter's view with more generosity. He would, and with justice, have complained of Smith's inconsistency in the use of terms; it is doubtful, however, whether he would have attempted to prove that labor is not a standard measure of value. At all events he would have shown that his idea of "labor" was very different from Smith's.

Had he been a more painstaking critic he would not have ascribed a new connotation to terms which he had adopted from the "Wealth of Nations" without drawing the attention of the reader to the alteration in meaning. Least of all would he have re-established these essentially new terms in Adam Smith's argument. Such treatment, however, Ricardo metes out to "real" wage, "rise" and "fall" of wages, a "rich" country.

Again, Ricardo frequently fails to observe that the assumptions which underlie an argument in the "Wealth of Nations" are quite different from the assumptions which he postulates in his "Principles," when attempting to combat the same argument. In his discussion of the rent of land, of the comparative value of gold, corn, and labor, of bounties, etc., he invariably insists on the importance of the action of the law of diminishing return. Nowhere does Adam Smith speak of that law. Yet curiously enough Ricardo argues as if Adam Smith, like himself, always assumed it. Still more amazing is it that he never in any single passage even indicates that he is aware of this striking fundamental difference between his own writings and those of his great predecessor. Again, in his discussions of the effects on profits of the accu-

mulation of capital, Ricardo fails to see that whereas he assumes that an increase of capital leads to an increase in population if there is no rise in the standard of comfort, Smith makes no such assumption. Had he been cognisant of these initial differences some of his arguments against Smith's opinions would have been characterized by emendation rather than negation.

We do not mean to imply that Ricardo was a destructive rather than a constructive critic. One of the outstanding features of the "Principles" is the manner in which subjects are introduced by means of quotations from the "Wealth of Nations." Indeed his treatise is founded on that of Smith. It is on Smith's involved treatment of labor that Ricardo builds his theory of "real" and "exchange" value, it is on Smith's theory of wages that he founds his so-called iron law; it is on the teachings of Smith that he bases his own chapters on Taxation and Currency. The germ of much of Ricardo's economic doctrine lies hidden in Smith's great work. We there find, tho but dimly evidenced and imperfectly expressed, the idea of value based on labor, of remuneration being concerned with rates, of rent. These "ideas" are, however, wrapped up in much that is general and inconclusive and a good deal that is inaccurate and inconsistent. Ricardo makes these truths which Smith, as it were, vaguely hints at, his central doctrines. He exhibits them in a clear light, he restates and co-ordinates them into a well-defined theory of value which, through all his discussions, he applies with the greatest consistency.

That theory may be divided into three main parts. First, there is the doctrine of abstract "real" value being regulated under a competitive system by the

amount of labor, direct and indirect, applied in production; secondly, that it is the labor applied at the margin or under the most disadvantageous circumstances that indexes value and that rent consists of the excess of total real value over and above that produced at the margin; thirdly, the annual amount of production represents a certain quantity of "real" value and that this real value is divided into wages and profits, the rates of which necessarily vary inversely. These three propositions form the base of Ricardo's economic system, in agreement with which he fashions all his discussions.

Smith had no such "sheet anchor." He first constructs an indefinite theory of value based on labor alone. Later he outlines another theory of "natural" value, which, he holds, is made up of certain natural "rates" of wages, profits, and rent, and he discusses the forces which govern these rates. In his treatment of wages one finds the elements both of Ricardo's "iron law" theory and of Mill's wage-fund theory. Of the real nature of rent he had but an inkling. His treatment of profits is similarly vague. What Smith did not, and what Ricardo did, see clearly was first, that the labor which regulates value is that which is carried on under the most disadvantageous circumstances and that therefore rent can have nothing to do with the determining of price, and secondly, that the rates of profits and wages are essentially complementary, the one to the other, and consequently that alterations in these rates do not in themselves affect price.

These two considerations, as we have attempted to show, account for several of Ricardo's criticisms. Sometimes the one, sometimes the other, is sufficient to explain the difference of opinion.

The first is important in leading to Ricardo's criticisms of Smith's teaching regarding: —

(1) The Rent of Land.

(2) The Value of Corn.

(3) The incidence of a tax on the produce of land.

The second led to his contrary conclusions regarding: —

(1) Alterations in the wage-rate in relation to price.

(2) The relation between profits, wages, and capital.

(3) Bounties.

(4) Foreign trade.

Both considerations enter into the cause of the difference of opinion on the incidence of taxes on wages and necessaries.

In so far as Ricardo applied these theoretical conceptions in the solution of deductive economic problems, he made a real advance beyond the results achieved by Adam Smith's indefinite treatment of economic phenomena. In formulating a more consistent theory and substituting in the place of the vague generalization so characteristic of the "Wealth of Nations," he led the way to the exact and logical treatment the science received at the hands of J. S. Mill and his successors, even altho the highly abstract nature of his discussions brought about the great movement in favor of the historical method.

Again, Ricardo's challenge of Smith's view of the value of corn leads to certain differences of opinion. Adam Smith considered the value of corn to be practically constant over long periods. He held that the

demand for corn regulated the supply of corn and the supply regulated the demand in that only a given population could be maintained by a given amount of corn. In this view Smith is, of course, quite correct. The value of corn *is* more constant over a long period than the value of other commodities, including the precious metals and money. From the point of view of strict theory, however, Ricardo's contention that not even corn can be considered a standard of value is incontrovertible. In those purely theoretical discussions on the effect of a bounty on exportation, and on the changes which take place in the comparative value of gold and corn as a country progresses in opulence, Ricardo's conclusions are more accurate than those of Smith. Adam Smith's neglect of the law of diminishing return in agriculture, to which reference has already been made, is also important in this connection. Again must Ricardo's opinion be respected where that law is assumed by him in discussing theoretical problems in which references to likely changes in the value of corn are made; tho in actual practice its operation in tending to raise the price of corn seems ever indefinitely to be postponed owing to the widening of the market and to the modern facilities for transportation, importation, and exportation.

Again, as we have observed, Ricardo oftener than not concerned himself with permanent and ultimate rather than with temporary and immediate conditions. Smith as often considers the former as the latter. But even when he does consider the permanent, he does not "push" his theories as far as Ricardo. And this consideration leads to our final and concluding observation. If we set aside those criticisms which are the result of misunderstanding or are directly

owing to differences of connotation accompanying co-incidence of denotation, if we pass over without further remark those which are largely due to Ricardo's none too generous interpretation of certain of Smith's passages, we find that the remaining and most important criticisms in which Ricardo makes a real advance on the teaching of Smith, are mainly the result of the very different attitude he assumed towards economic phenomena as compared with Adam Smith, and indeed, with all his predecessors in the realm of economic thought and investigation. His method was essentially the abstract deductive method, tho the generalizations which form the base of his reasoning are often the result of a careful inductive process. As Bagehot well points out,[1] Adam Smith did not seem aware that he was dealing with an abstract science at all. His treatment often approximates to the abstract on account of the narrow view he took of the nature of man in his economic writing. Ricardo on the contrary builds on the abstraction of the economic man. He formulates the abstraction of "real" value. He develops a highly abstract theory of remuneration, and an equally abstract theory of rent, during which process he exhibits the elements of the doctrine of the margin. Finally, armed with abstraction, he investigates the domain of foreign trade, and formulates the doctrine of comparative costs, which received such careful and elaborate development at the hands of J. S. Mill. Adam Smith, on the other hand, is inductive and deductive in turn, now developing a theory from the observation of phenomena, anon illustrating an assumption or sweeping generalization by an appeal to fact. He seldom, however, travels beyond the concrete. His work, tho monumental

[1] The Political Economy of Adam Smith, Walter Bagehot.

and invaluable, is nevertheless of too general a character to be of permanent and lasting *scientific* worth. It is scarcely, then, matter for surprise that when Ricardo read the "Wealth of Nations" he should have found so much with which to disagree, so much to qualify and emend, yet withal so much to exalt and appraise.

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A GROUP OF TRUSTS AND COMBINATIONS

SUMMARY

I. The Electric Lamp Combination; relation to General Electrical Company, 594. — Control of tantalum and tungsten filaments, 600. — Circuit Court decree of 1911, 601. — II. The Keystone Watch Case Company, 602. — Methods of destroying competition, 607. — III. The United Shoe Machinery Company, 608. — IV. The Consolidation Coal Company; how related to Baltimore & Ohio Railroad, 613. — V. The Bath Tub Pool, 617. — Control of the jobbing trade, 623. — VI. The Cash Register Company, 625. — Deliberate destructive competition, 626. — VII. Combination of Wholesale and Retail Dealers, 630. — Michigan lumber retailers, 632. — Other lumber retailers, 634. — Wholesale lumber dealers, 637. — Pacific Coast jobbers of plumbing supplies, 640. — Southern Wholesale Grocers' Association, 641. — VIII. Conclusion, 642.

RECENT investigations and government suits have brought to light numerous data in regard to the history and methods of operation of certain industrial combinations and "trusts" which are interesting in a high degree. Some of these organizations show a remarkable similarity to certain pools existent two or three decades ago; some show strikingly unfair methods of competition; others that the pool form of combination is one of the most persistent features of modern industrial organization.

Of necessity any examination of several of these combinations and trusts in the space of a single study must involve an undesirable degree of disconnectedness, especially as, with one or two notable exceptions, those selected by the writer for examination present a great diversity of characteristics. In the majority of the cases there is not enough information available to furnish material for a minute study upon any one of these particular trusts or combinations. Hence a sketch has been attempted, in the space of the present

article, of the history and methods of operation of the following: the Electric Lamp Combination, the Keystone Watch Case Company, the United Shoe Machinery Company, the Consolidation Coal Company, the Bath Tub Combination, the National Cash Register Company, and several wholesale and retail dealers' associations whose methods of operation have been substantially alike.

I. The Electric Lamp Combination

Before the year 1905 the only incandescent lamp manufactured and sold in the United States commercially was the carbon filament lamp. These lamps had been invented many years previously and were in general use throughout the entire United States. In 1894 the patents on this type of lamp expired, and not long after this the first combination in the lamp business was effected.

On August 4, 1896, the General Electric Company and six others [1] formed an unincorporated association known as The Incandescent Lamp Manufacturers for the purpose of fixing prices, allotting business and customers, and prescribing rules and regulations for the manufacture and sale of carbon filament lamps.[2] The organization was to all practical intents and purposes a pool of the same general type as those of earlier decades. As in the case of the Wall Paper Manufacturers' Association of 1880 [3] and the Sand Paper Association,[4] each member of the pool was

[1] Bryan Marsh Company, Buckeye Electric Company, Columbia Incandescent Lamp Company, Sunbeam Incandescent Lamp Company, Adams-Bagnall Electric Company, and Perkins Switch and Manufacturing Company. The latter two of these concerns later gave up the incandescent lamp business.

[2] United States v. General Electric Company, and Others. Petition in Equity in Circuit Court of United States for the Northern District of Ohio, pp. 12–15.

[3] New York Senate Trust Investigation, 1888, p. 610.

[4] Ibid., p. 620.

obliged to make a large cash deposit as a guarantee of good faith and of conformity to the rules of the Association. Violations were punishable, as usual under a pooling agreement, by the system of fines.[1] The first agreement was for a term of three years from August 4, 1896, and was extended from time to time until a new type of combination was adopted.

After this organization was completed several other companies allied themselves with the original seven members of the association. In the few months remaining of the year 1896 four new concerns [2] joined the combination. In 1897 one new member [3] was added and in 1901 five [4] more. Several of the concerns either withdrew from the association or else discontinued the manufacture of carbon filament lamps, seven all told.[5] The Incandescent Lamp Manufacturers also executed agreements with the Westinghouse Company under the terms of which the Sawyer-Man Electric Company, — at that time, the lamp subsidiary of the former corporation, — agreed to maintain the prices fixed by the combination.[6]

In May, 1901, the National Electric Lamp Compony was incorporated in New Jersey. This corporation was a holding company designed to combine all the interests in the combination known as the

[1] Op. cit. Petition in Equity, p. 13.

[2] New York and Ohio Company, Davis Electric Works, Aylesworth and Jackson, Bernstein Electric Company.

[3] Shelby Electric Company.

[4] Fostoria Incandescent Lamp Company, Colonial Electric Company, General Incandescent Lamp Company, Munder Electric Company, Warren Electric and Specialty Company.

[5] Op. cit. Petition in Equity, p. 14.
The Shelby Electric Company and Bryan Marsh resigned from the combination shortly after its organization but rejoined it on Jan. 4, 1901. Adams-Bagnall Company, Perkins Electric Switch and Manufacturing Company, the Davis Electric Works, Aylesworth and Jackson and the Bernstein Electric Company went out of the lamp business.

[6] Op. cit. Petition in Equity, p. 15.

Incandescent Lamp Manufacturers, excepting only the General Electric Company, the Westinghouse Electric and Manufacturing Company, and their subsidiaries. It was also intended to induce as many independent companies as possible to enter the combination.[1] The capitalization of the National Electric Lamp Company was not large. It consisted of $150,000 of preferred and $500,000 of common stock. The company also issued $2,000,000 of bonds. The General Electric Company secured $360,000 in common stock, and the remainder of the common and the preferred issues, except about $16,000 of common, was distributed in acquiring the stocks of other companies, members of the electric lamp pool, as was also $1,314,000 of the authorized two million of bonds.[2] As a result of these operations, the National Electric Lamp Company found itself in control of all the parties to the original combination of 1896, excepting only the General Electric Company, Westinghouse Electric and Manufacturing Company, and five others.[3] Four of these five others were acquired in 1902 and 1903, while the fifth was brought into the combination in 1907.[4]

Before the incorporation of the National Electric Lamp Company, there were in existence outside of the lamp pool some seven independent lamp companies. Against these the new corporation began a campaign of acquisition. Of the seven competitors which were in existence outside the combination in 1901, it gradually acquired four. Of the six competitors which came into being between the time of the organization of

[1] Op. cit. Petition in Equity, p. 17.

[2] Ibid., pp. 17–18.

[3] Colonial, Munder, and Shelby Electric Companies, New York and Ohio Company and the Warren Electric and Specialty Company.

[4] Op. cit. Petition in Equity, p. 19.

the National Electric Lamp Company in 1901 and the middle of the year 1908 the combination was also able to acquire three, two in 1905 and one in 1907. This movement is shown in the following table:

ACQUISITION OF CONCERNS BY THE NATIONAL ELECTRIC LAMP COMPANY[1]

Year	Members of former pool not controlled in 1901	Existing concerns competing in 1901	New concerns organized after 1901
1902	2	1	–
1903	2	–	–
1904	–	–	–
1905	–	1	2
1906	–	–	–
1907	1	1	1
1908	–	–	–
1909	1	1	–

In order to finance these acquisitions, which were made sometimes by cash payments and sometimes by notes, bonds being used in only two instances, the General Electric Company now and then advanced cash to the National Electric Lamp Company, the latter concern issuing to it from time to time bonds, to liquidate the preceding advances.[2] Thus it came about that in August, 1905, the authorized bonds of the National Electric Lamp Company were increased to $4,000,000. In December, 1908, the $150,000 of preferred stock of the concern was retired and the $500,000 of authorized common stock was increased to $2,500,000. Of this latter increase $500,000 was issued to stockholders for cash in January, 1909, and at the same time the remainder was issued as a stock dividend representing a part of the accrued profits of the company. Again, in the middle of the same year the authorized issue of capital stock was

[1] Compiled from statements in Petition in Equity, pp. 19–21.

[2] Op. cit. Petition in Equity, p. 22.

increased, this time to $4,000,000, the extra $1,500,000 being issued to stockholders as a stock dividend and a portion of the accrued profits of the Company. The same process was repeated in March, 1910, when the issue of stock was increased to $5,000,000 and another million dollars distributed.

The General Electric Company, it may be observed, had from the first owned a majority of the entire stock of the National Electric Lamp Company. None of this, however, stood in its own name, for the General Electric Company preferred that the National Company should appear to be an independent concern.

The lamp combination increased its control of the lamp business by entering into further agreements, in 1904 and 1907, with the Westinghouse Electric and Manufacturing Company, whereby the latter concern agreed to maintain such prices on carbon filament lamps as should be fixed by the General Electric Company, the National Electric Company, and their subsidiaries. Agreements of a like nature were secured from the Capital Electric Company and Kentucky Electric Company in 1904; and the Aetna and Gilmore Electric Companies, the Franklin Electric and Manufacturing Company, and Liberty Electric and Manufacturing Company in 1909. These agreements included the companies mentioned in the government's petition as being either existent outside the combination in 1901, or organized subsequent to that year, of which the National Electric Lamp Company did not secure direct control.[1]

In 1906 the General Electric and National Companies obtained by contract from the Siemens and Halske Aktiengesellschaft of Berlin as vendors "the exclusive right to manufacture, use, and sell in the

[1] Op. cit. Petition in Equity, p. 25. See also supra, p. 4.

United States, its territories and dependencies, tantalum filament lamps (excluding the manufacture of filaments therefor)" under the patents of the vendors. For this privilege the American companies paid $250,000 in cash, 60 per cent of which expense was borne by the General Electric Company and 40 per cent by the National Electric Lamp Company. In addition the American companies agreed to allow a share of the profits to the foreign concern and to buy all tantalum filaments of the Siemens Company.[1] In the same year, for $100,000 in cash paid to vendors[2] and an agreement as to a royalty upon each lamp sold in the United States, an option was secured from the Deutsche Gasglühlicht Aktiengesellschaft (Auer Gesellschaft) of Berlin for exclusive rights to the "tungsten filament" lamps that might follow the applications and inventions of the Auer Company.

In 1909 an option was secured by the General Electric Company from the Bergmann Elektricitäts-Werke of Berlin, Germany, and from S. Bergmann, upon their patents and applications upon all kinds of incandescent lamps and also the processes and machinery employed in the manufacture. The option was subsequently exercised, and upon payments aggregating $175,000[3] the German company agreed to, and did, cease doing business in the United States after May 10, 1909. Further, in the same year, the applications and inventions covering "tungsten filaments" of the Internationale Wolfram Lampen Aktien Gesellschaft (Just & Hanaman), of Budapest, Hungary, and of Dr. Hanz Kuzel of Vienna, Austria, were

[1] Op. cit. Petition in Equity, pp. 27–28.

[2] Division of expense between the General Electric Company and National Electric Company was as before 60 and 40 per cent respectively.

[3] General Electric sold the National Company 40 per cent interest subsequently.

bought by the two American companies, the former for $250,000, the latter for $240,000.[1] These purchases represented patents covering practically all the valuable inventions and applications of "tungsten" and "tantalum filament" lamps. By their acquisition the National Electric Lamp Company and the General Electric Company practically forestalled any possibility of competition in these kinds of lamps in the United States.

The General Electric Company and National Electric Lamp Company were now possessed of a handle to use against the independent manufacturers through the jobbing trade. The patents upon carbon filaments had lapsed in the nineties, and jobbers were entirely at liberty to buy from whom they pleased. But both the "tungsten" and "tantalum" lamps were in competition with carbon filament lamps. Inasmuch as this was the case, it now became possible for the lamp combination controlling these two types of lamps to require of all jobbers desiring to purchase them that they should also buy their carbon filament lamps exclusively from the combination. This state of affairs, so the government alleged, made it practically impossible for any outside company to successfully engage in the business of manufacturing carbon filament lamps.[2] The power of the lamp combination was from time to time greatly strengthened by contracts with makers of lamp machinery, tubes, bulbs, and bases, either to sell to the combination exclusively or else at prices greatly below those quoted to independents and competitors.[3]

Through the series of incidents described, the General Electric and controlled companies together with those

[1] Op. cit. Petition in Equity, pp. 27–30.
[2] Ibid., pp. 31–32.
[3] Ibid., pp. 34–37.

concerns with which agreements had been made came to control ninety-seven per cent of the electric lamp business of the United States. This control and the methods by which it was acquired led to the suit by the government against the combination under the Sherman Act and the handing down on October 12, 1911, of a decree against it in the Circuit Court for the Northern District of Ohio. It was ordered that the General Electric Company and all its subsidiaries must henceforth conduct business as the General Electric Company, all the subsidiaries being dissolved.[1] Contracts with manufacturers of machinery, bulbs, and tubing, prohibiting sale to others than defendants or obligating sale to defendants at different prices than to competitors, were enjoined, as were also agreements fixing the prices of any sort of lamps by the defendants in either the wholesale or retail trade.[2] Differentials on lamps of the same quality were forbidden.[3] Contracts compelling purchasers of "tungsten" and "tantalum" and other filament lamps to buy all their carbon filament lamps of defendants as a condition to obtaining the first mentioned were also prohibited.[4] Discriminations against those not buying carbon filament lamps of the defendants were forbidden and enjoined when such parties purchased lamps of other filaments.[5] The right to fix lower rates to customers of rival manufacturers than were made to the established trade was denied,[6] while those independent concerns formerly

[1] United States v. General Electric Company in Circuit Court of United States for Northern District of Ohio. In Equity, No. 8120. Final decree, pp. 3–4.

[2] Ibid., pp. 5–6.

[3] Ibid., p. 7.

[4] Op. cit. Petition in Equity, pp. 7–8.

[5] Ibid., p. 8.

[6] Ibid., final decree, p. 9.

in alliance [1] with the combination were forbidden to make contracts under license agreements, so far as these fixed prices and terms of sale at which purchaser or vendee from a manufacturer should sell incandescent electric lamps.[2]

II. The Keystone Watch Case Company

The second combination, the Keystone Watch Case Company, did not attain in its field of industry so great a degree of dominance as did the lamp combination in the manufacture and sale of electric lamps. Neither does it exhibit methods of competition as questionable as did the latter combination and some others that will be considered. But it did succeed in obtaining a very substantial control of the watch case business; and it is also of interest as an illustration of the widespread tendency on the part of manufacturing combinations to control as far as possible the jobbing trade by fair means or foul.

The business of manufacturing watches may be divided into two parts, the manufacture of watch cases [3] and the manufacture of watch movements. In 1899 the business of T. Zurbrugg, Bates & Baker, and H. Muhr's Sons, engaged in the industry of watch case manufacture, was consolidated under the name of T. Zurbrugg Company, a corporation, and almost immediately was acquired by the Riverside Watch Case Company of Riverside, New Jersey. At that time a corporation known as the Keystone Watch

[1] Supra, p. 7.

[2] Op. cit., pp. 9–10.

[3] The statements herein made refer to the filled watch case industry only. Ninety per cent of all the watch cases manufactured and sold in the United States are filled watch cases.

Case Company engaged in the same industry was also in operation in the city of Philadelphia. Of this latter concern Zurbrugg and others were able to obtain control, and thereupon they organized under the laws of Pennsylvania "The Keystone Watch Case Company" for the purpose of taking over both the Riverside Watch Case Company and Keystone Watch Case Company. For the latter of these two concerns payment was made partly in cash but mostly in the stock issued by the new company.[1]

In August, 1899, a concern known as the Philadelphia Watch Case Company was organized by the interests connected with the parent company. The purpose of this concern was the marketing of the products of the Riverside Plant of the new corporation, and also, it is alleged, to give to the general public the idea that the two plants of the combination were being operated independently.[2] In the succeeding year the combination began to reach backward into the field of watch movements, and acquired the entire capital stock of the New York Standard Watch Company, a corporation of New Jersey, which manufactured a low grade watch movement and whose separate corporate existence was continued. This acquisition was closely followed in 1901 by the purchase of the United States Watch Company. A new corporation was then organized under the same name to take over the property and all the capital stock ($1,000,000) of this new acquisition.[3]

In January, 1903, the Keystone Company bought from a trustee in bankruptcy the trade marks and good

[1] United States of America v. The Keystone Watch Case Company and Others. Petition in Equity in Circuit Court of United States for Eastern District of Pennsylvania, pp. 4–5.

[2] Ibid., p. 5.

[3] Ibid., pp. 5–6.

will of the E. Howard Clock Company. The Howard watch movement was a well known and favored one, and the Zurbrugg interests caused to be organized in New Jersey a corporation known as the E. Howard Watch Company, which took over the purchased trade marks and good will as well as all the property that had hitherto belonged to the United States Watch Company. The new corporation then proceeded to manufacture, advertise, and sell a high grade movement known as the E. Howard movement, which differed in many respects from the old, genuine Howard watch.[1] Also, in 1903, the Keystone Company purchased the entire common stock of the Crescent Watch Case Company.[2] Now the Crescent Company, which had been organized many years previously, had purchased in 1890 the entire watch case business of the American-Waltham Watch Company. Three years later they had absorbed the Bay State Watch Company of Boston and dismantled its plant.[3]

In the same year the Keystone Company acquired a 42 per cent interest in the American Watch Case Company of Toronto, Ltd., a concern engaged in the manufacture of watch cases in Toronto, Canada. The balance of the stock of this concern was owned by the Waltham Watch Company and the Elgin Watch Company, and the officers of these two corporations. The acquirement of this interest was followed by the organization of the Keystone-Crescent Watch Case Company, of Canada, Ltd., for the purpose of marketing the products of the American Watch Case Company. The capital stock of the Keystone-Crescent Company was owned by the defendant company,

[1] Op. cit. United States v. Keystone Watch Case Co., Petition in Equity, pp. 6–7

[2] The preferred stock was also purchased in 1906.

[3] Op. cit. Petition in Equity, pp. 7–8.

the Keystone Watch Case Company.[1] The next step in the progress of the combination was a contract between the Keystone Watch Case Company and the Elgin Watch Company in 1904, whereby the former was placed in exclusive control of the entire export trade of the latter company except that to Canada. In 1909 another contract made with the Waltham Watch Company constituted the Keystone Company sales agent of the former company in all the principal foreign countries in which there was a trade in watch cases excepting only Great Britain, France, and Spain.[2]

Down to the year 1910 the operations of the Keystone Company may be described as secret. The organization of separate companies was continued, and separate sales agencies were maintained in the marketing of products. In the early part of January, 1910, however, this policy was definitely abandoned by the outright transfer to the Keystone Company of the properties of all the various subsidiary companies.[3] On January 15, 1910, a circular letter was sent to the various jobbers throughout the country. The letter called attention to the facts that: —

1. A memorandum of prices was enclosed that was being sent out to all the retail trade.
2. A memorandum of prices was also enclosed at which Boss, Crescent, Planet, Crown, and Silveroid watch cases and Excelsior watches were to be billed in future to jobbers; which prices were to be net and subject to a cash discount only.

[1] Op. cit. United States v. The Keystone Watch Case Company. Petition in Equity, pp. 8–9.

[2] Ibid., p. 9.

[3] Ibid., p. 13.

3. It had been determined to sell goods exclusively to jobbers conforming voluntarily to the wishes of the company in the matter of sales.
4. Whether the wishes of the Keystone Company were complied with or not, that company would, from time to time, exercise its rights to select the jobbers to whom it would sell its goods. It would refuse to sell to those who handled the goods of the Keystone Company in a manner which that company regarded as detrimental to its interests.
5. Sales of the brands mentioned under point 2 would be at fixed prices, and *it was desired* [1] that sales by jobbers should be without deviation from the prices fixed for sales to retailers, subject only to the cash discount.
6. All jobbers of goods under the above trade marks and also under the Howard trade mark *were requested* [1] not to deal in watch cases other than those manufactured by the Keystone Watch Case Company.
7. Howard Watches would be sold under terms of the license.
8. All advertisements of Keystone goods would be subject to approval of that company.[2]

To avoid any danger of misunderstanding the agents of the Keystone Company followed up the circular letter thus issued to the jobbers. The latter were informed that the terms laid down in this mildly worded epistle would be strictly enforced and that if the demands of the Company were not acceded to the jobbers might be entirely deprived of handling

[1] Italics are mine.

[2] Cf. circular letter of January 15, 1910. Op. cit. The United States v. The Keystone Watch Case Company. Petition in Equity, pp. 14–15.

the Keystone line of goods. This threat was influential in securing exclusive contracts from a large percentage of the jobbing houses.[1]

To destroy competition, the Philadelphia watch case works of the company were utilized to turn out large quantities of inferior grade watch cases not labeled with any of the Keystone brands, which have been put upon the market at prices regardless of cost, solely for the purpose of meeting the competition of other manufacturers. Threats of total destruction have been frequently used against its competitors, so the Government alleges, for the purpose of acquiring the business of these various concerns.[2] The result has been that the Keystone Company has been able to force out of the filled watch case business all competitors, except six who together do not control more than 20 per cent of the entire watch case business of the United States.[3]

In the circular letter of January 15, it was stated that the Howard watch was to be sold subject to the license which was issued with each watch. This license provides and has provided that: —

1. This movement shall not be removed from its case or used in any other case, nor the case used for any other movement.
2. This watch shall not be sold to any one who is regarded as objectionable to the manufacturer, nor the license removed from any box nor the box sold without license.
3. Retailers shall not advertise, sell, or offer to sell this watch at a less price than ——.[4]

[1] Op. cit. The United States v. Keystone Watch Case Company. Petition in Equity, p. 16.

[2] Ibid., p. 17.

[3] Ibid., p. 18.

[4] Ibid., pp. 21–22.

The license states that the watch is covered by one or more of three patents and that a violation of the above conditions by vendor, vendee, or user constitutes an infringement, and that the infringer will be prosecuted as such.

The price policy has apparently been to secure large profits. Leaving out of consideration the amount of gold, the cost of the manufacture of similar sizes and patterns of watches is about the same. Yet in one instance the cost to the retail purchaser of a certain case is twice the cost of a similar case, altho the latter case contains 20 cents of gold less. It is interesting to note that in 1910 the Keystone Company earned 14 per cent on its capital stock of $6,000,000; about one-half of the capital stock, according to the Government, representing trade marks, good will, and the like.[1]

III. The United Shoe Machinery Company

On turning from an examination of the Keystone Watch Case Company to the study of the United Shoe Machinery Company, one passes from a combination with a very substantial degree of control to a combination that possesses practically an absolute monopoly. The United Shoe Machinery Company has for many years been pointed out, and with justice, as our foremost example of a patent monopoly. The formation of this combination, and especially its methods of retaining its dominance in the industry, are therefore highly interesting.

In the manufacture of shoes four classes of machinery are used which are considered essential to the process: lasting machines, welt sewing and out-sole stitching

[1] Op. cit., p. 23.

machines, heeling machines, and metallic-fastening machines.[1] All of these four classes of machinery are exceedingly expensive to manufacture. Because of this fact and more especially because the best of such machines have been and are manufactured under letters patent of the United States by other parties, it has for a considerable period been impossible or else impracticable for shoe manufacturers to turn out their own machinery. To meet the enormous demand for shoes, manufacturers to the number of more than 1,500 have sprung up over the country. It was also necessary that shoe manufacturers should be equipped with thoroly up to date equipment, which, on account of the above mentioned circumstances, they were obliged to secure from the manufacturers of machinery.

Prior to the seventh day of February, 1899, four companies, under letters patent of the United States, sold and leased in the aggregate 85 per cent of the shoe machinery included in the four above mentioned groups. These companies were the Goodyear Shoe Machinery Company, the Consolidated and McKay Lasting Machine Company, the McKay Shoe Machinery Company, and the Eppler Welt Machine Company, all corporations of the State of Maine.[2]

Individually the proportions of machinery manufactured by various concerns were about as follows: The Consolidated and McKay Lasting Machine Company manufactured 60 per cent of all lasting machines; the McKay Shoe Machinery Company controlled about 70 per cent of the heeling machines made and about 80 per cent of the metallic fastening machines;

[1] United States v. Winslow et al. Indictment No. 114 in Circuit Court of the United States for District of Massachusetts, p. 6.

[2] Ibid., pp. 7–8.

the Goodyear Shoe Machinery Company manufactured both lasting machines and sewing and stitching machines. Its output of the former was about 10 per cent of the entire country's product and of the latter 80 per cent of the same.[1]

Until 1897, these various concerns operated independently of one another, shipping throughout the United States either on contracts of sale or lease free from restraint as to customers, prices, or rentals to be charged for their machines or terms of sale or lease. But the defendants in the suit by the Government, not satisfied with the large degree of monopoly that their companies enjoyed under the patents owned, and with a view to strengthening their hold upon the industry, organized a corporation at Boston on the seventh day of February, 1897, under the laws of New Jersey. This corporation was known as the United Shoe Machinery Company, and had an authorized capitalization of $25,000,000 of stock, divided equally between common and preferred. Its purpose was the manufacture, purchase, sale, leasing, and operation of, and the dealing in and with all kinds of machinery, tools, and implements, but especially boot and shoe machinery. Of this new corporation the defendants became the officers, and continued in such capacity down to the time of the filing of the suit against them.

The United Shoe Machinery Company thus organized took over the capital stock of the four above mentioned corporations, — the Goodyear Shoe Machinery Company, the Consolidated and McKay Lasting Machine Company, the McKay Shoe Machinery Company, and the Eppler Welt Machine Company, — by means

[1] United States v. Winslow et al. Indictment No. 113 in Circuit Court of the United States for the District of Massachusetts, pp. 16–17. The percentage of the Eppler Welt Machine Company is not given.

of an issue and exchange of its stock for that of the four last mentioned companies.[1] From that date on the concern did business as the United Shoe Machinery Company of New Jersey, but also operated two other concerns of which it was the real head, the United Shoe Machinery Company of Maine, and the United Shoe Machinery Company of Connecticut, and besides these some fifteen other subsidiary corporations,[2] control of which the United Company from time to time acquired. When Winslow (the President) and others were indicted in 1911, the United Company and the corporations controlled by it were said to handle 98 per cent of the total output of shoe machinery.[3]

Whereas formerly the various concerns manufacturing shoe machinery had operated in interstate commerce both by selling and leasing machines, the new corporation absolutely ceased to sell any shoe machinery to shoe manufacturers,[4] adopting exclusively a system of leasing. By the terms of these leases the various manufacturers agreed to use exclusively for a period of seventeen years from the execution of the lease each and every machine included in the group of machinery controlled by the United Company,[5] being bound at the same time to use in their business only such machinery and forbidden to use the machines of any other company, upon penalty of the forfeiture of their leases and contracts.[6] The result of these tactics was to force out of business several independent concerns, among which were the Goddu Sons Metal Fastening Company, the Duplessis Independent Shoe

[1] Op. cit. Indictment No. 114, p. 10.

[2] Cf. List of Companies, op. cit., United States v. Winslow et al. Indictment No. 114, pp. 13–14.

[3] Ibid., p. 18.

[4] Ibid., Indictment No. 113, p. 48.

[5] Ibid., Indictment No. 114, p. 18.

[6] Ibid., Indictment No. 113, p. 48.

Machinery Company, the Standard Shoe Machinery Company, and Harry E. Cilley.[1]

The United Company acquired for cash or by an exchange of stock a large number of concerns who were engaged in the same business, and also their letters patent, taking from the vendors in substantially all instances covenants not to engage in competition with the United Company and also covenants that if they at any time invented machines, or patented them, or improved them, or acquired any interest or ownership therein, they should assign the same to the United Company. A partial[2] table of the concerns acquired is of interest: —

TABLE OF CONCERNS ACQUIRED BY THE UNITED SHOE MACHINERY COMPANY[3]

Date acquired	Number of concerns	Date acquired	Number of concerns
1899	5	1906	2
1900	3	1907	1
1901	3	1908	2
1902	5	1909	1
1903	3	1910	4
1904	4	1911	3
1905	1		—
			Total 37

From the above mentioned contracts and covenants with competitors it would appear that the United Shoe Machinery Company has always stood in danger of competition in spite of its supposed patent monopoly. In other words, tho the basis of the control of that corporation has been the patent, it is only the repeated purchase of concern after concern at enormous prices

[1] Op. cit. United States v. Winslow et al. Indictment No. 114, pp. 25–26.

[2] The Grand Jurors affirm in their presentment that the list from which this table is made up is only a partial one.

[3] Op. cit. United States v. Winslow et al. Indictment, No. 114, pp. 28–30. Table compiled from list there given.

and the taking over of newly invented processes and patents that have enabled it to survive. An exceedingly good example of this is seen in the Plant incident. Thomas G. Plant invented machines designed to perform all the operations of the machines included in the four groups necessary to the manufacture of shoes. In May, 1910, he installed in his plant in Boston a complete set of his new machines, dismantling and taking out of the factory the machines of the United Company [1] which had been hitherto in use. The conclusion of the incident was that the United Company bought a majority of the capital stock of the Plant concern for $6,000,000. In return Plant assigned all interests in patents and rights thereto that he might own or control for the subsequent fifteen years.[2]

IV. The Consolidation Coal Company

In one sense of the word it does not seem proper to include in this group of combinations and trusts the Consolidation Coal Company, on account of its close and intimate connection with the Baltimore and Ohio Railroad. Inasmuch, however, as the methods of that and allied concerns in dealing with certain independents are of interest it has been decided, upon consideration, to make a brief examination of it.

The Consolidation Coal Company was incorporated in March, 1860, under the laws of Maryland, and by the early years of the twentieth century had outstanding $10,250,000 capital stock. It also had a bonded indebtedness of $600,000 outside of $1,000,000 of the underlying bonds of the Cumberland and Pennsylvania

[1] Op. cit. Indictment No. 114, pp. 31–32.

[2] Ibid., pp. 32–33.

Railroad which it had acquired.[1] On the 20th day of June, 1901, the Fairmount Coal Company was organized and purchased a large amount of coal property upon which were located thirty-five mines with an output at that time of roughly three and one-half million tons per annum.[2] In the same year, under the laws of Pennsylvania, the Somerset Coal Company was incorporated with a capital stock of $4,000,000 and an authorized bond issue of $4,000,000.[3] The Clarksburg Fuel Company was also organized in 1901 under the laws of West Virginia, consolidating several coal properties. Its capitalization was $3,000,000 and it issued $2,500,000 of bonds.[4] About 1903 a process of rapid consolidation was begun. In that year the Fairmount Company took over the Clarksburg Fuel Company,[5] and the Consolidation Coal Company acquired a majority of the capital stock of the Somerset Company for which it paid $22.50 per share. The final step in this process of combination was the acquisition by the Consolidation Coal Company of a majority of the stock of the Fairmount Coal Company at a price of $47.50 per share.[6]

Prior to June and July, 1904, the Pittsburg and Fairmount Fuel Company had been shipping coal at the rate of approximately 300,000 tons per year. It sold its tonnage to the Fairmount Company and also secured the use of certain cars from the same company. In the middle of 1904 the Fairmount Company determined to put an end to this relation-

[1] Moody's Manual, 1902, p. 1423.

[2] Report on Discriminations and Monopolies in Coal and Oil. Interstate Commerce Commission, January 25, 1907, p. 9.

[3] Op. cit. Moody, 1902, p. 1658.

[4] Manual of Statistics, 1902, p. 422.

[5] Op. cit. Coal and Oil, p. 9.

[6] Ibid., p. 11.

ship, and shortly after it purchased a majority of the stock of the Pittsburg and Fairmount Fuel Company at one dollar.[1]

In 1905, the managers of the Southern Coal and Transportation Company discovered that they were not making much money in their business. This Company owned 4,800 acres of coal lands in West Virginia, but it had been impossible for them to secure sufficient car service from the Baltimore and Ohio Railroad, which, it may be incidentally mentioned, was the owner of 52 per cent of the stock of the Consolidation Coal Company. In consequence of these circumstances, the President of the Southern Coal and Transportation Company, Mr. B. F. Berry, arranged to sell the entire capital stock of the concern together with all its bonds for the sum of $375,000 to Messrs. Watson and Wheelwright, President and Vice-President respectively of the Consolidation Coal Company. The last named gentlemen upon the completion of this transaction transferred to the Consolidation Coal Company 2,501 shares of the said stock, — a bare majority, — for $400,000, thus giving to the Consolidation Coal Company control, tho retaining a profit for themselves of $25,000 in cash and the balance of the stock, 2,499 shares.[2]

The original holders of the Southern Coal and Transportation Company stock had invested about $500,000 in the properties, and in consequence lost a considerable amount. It was alleged that the property would have been worth a great deal on the lines of any railroad which furnished equipment adequate to care for the output of coal.[3]

[1] Op. cit. Coal and Oil, p. 10.

[2] Ibid., pp. 10–11.

[3] Ibid., p. 11.

This final purchase placed in the hands of the Consolidation Coal Company the possession of a large amount of coal lands, and by its ownership of fifty-two per cent of the stock of that concern the Baltimore and Ohio secured the complete control of a large proportion of the coal properties upon its lines. The real object of the Baltimore and Ohio in favoring the purchases by the Consolidation Coal Company of the Somerset and Fairmount Companies is alleged to have been protection of its interest, it being feared that these properties might be acquired by the Wabash Railroad.[1]

It may be added that a later railway investigation resulted in the sale by the Baltimore and Ohio Railroad of its interests in the Consolidation Coal Company. In order, however, that the Baltimore and Ohio might retain control of the coal traffic of that company a unique scheme was resorted to. A percentage of the purchase money was to be paid down in cash, and arrangements were made for further partial payments as security for which the stock was placed in the hands of a trustee. The final payment on this stock may be extended for a period of thirty years but the purchaser has no option to pay off the balance until the fixed periods of payment expire. Hence the last of the purchase money cannot be paid until the end of thirty years. The railroad retained a lien for the balance of unpaid purchase money, and by the terms of the contract of sale the Consolidation Coal Company shall ship over the Baltimore and Ohio Railroad alone until all the purchase money for the stock is paid.[2]

[1] Op. cit. Coal and Oil, p. 13.

[2] Ibid., pp. 13–14.

V. The Bath Tub Pool

One of the most recent of our industrial combinations is the Bath Tub pool. The term pool is used advisedly; for while nominally the various members of the combination conducted business under certain patents licensing them to manufacture enameled iron ware, this device, as will be clearly shown, was a subterfuge employed to cover in a measure a form of organization that in essence was merely a manufacturers' association for the purpose of fixing and maintaining prices.

Sometime during the latter part of 1909 or early in 1910 the Standard Sanitary Manufacturing Company and fifteen other corporations and thirty-four individuals,[1] — officers, with one exception, of the above corporations, — carrying on a business of manufacturing and dealing in sanitary iron ware, bath tubs, lavatories, sitz and foot baths, wash sinks, drinking fountains, laundry trays, infants' baths, and other articles of a like nature,[2] entered into a combination which, as charged by the Government, was in restraint of interstate and foreign trade in sanitary enameled iron ware. Outside of the sixteen corporations the only other manufacturers and dealers in commodities of this sort were six in number. The total output of these latter concerns was so much smaller than that of the corporations forming the combination that the independents only controlled 22 per cent of the 250 furnaces in the country, while their output was only

[1] United States of America v. Standard Sanitary Manufacturing Company and Others. In the Circuit Court of United States for District of Maryland, Opinion of Court, p. 2.

[2] United States v. Standard Sanitary Manufacturing Company and Others. No. 5163. A True Bill in the United States District Court for the Eastern District of Michigan, November term, 1910, p. 26.

15 per cent of the total output as compared with 85 per cent controlled by the combination.[1] The annual value of the national output of sanitary and enameled iron ware was probably not less than $10,000,000 and was set by one party at as high as $14,000,000 annually.

On August 4, 1909, one E. L. Weyman became commissioner or actuary of a newly organized or reorganized Standard Sanitary Enameled Ware Association. To this Association all the corporate defendants belonged except the Kerner Manufacturing Company, and in addition the association was joined by four other concerns which later failed to become parties to the agreements which led to the suit by the United States.[2] Circular letters sent out by Weyman to the various concerns composing the Sanitary Enameled Ware Association tend to prove that competition from December, 1909, to April, 1910, between the various manufacturers was exceedingly severe and that sometimes goods were sold even below cost.[3] One of Weyman's duties appears to have been to do what he could by correspondence to prevent the price-cutting among members of the Association. Cuts of from two and one-half to five per cent below the normal prices were a common thing in the business. Cuts of twenty per cent were not infrequently made.[4] These conditions of the trade seem apparently to have laid the foundation for the agreements that were shortly after entered into and carried out by combination.

[1] Op. cit. Opinion of Court, p. 9.

[2] Op. cit. United States v. Standard Sanitary Manufacturing Company. Opinion of Court, p. 14.

[3] United States v. Sanitary Manufacturing Company and Others in the Circuit Court of United States for District of Maryland, No. 17. On final hearing, Brief for United States, p. 33.

[4] Op. cit. United States v. The Standard Sanitary Manufacturing Company. Opinion, p. 14.

A meeting of the members of the Sanitary Enameled Ware Association was held at Pittsburg on February 1, 1910, and was followed by one called together by Weyman in Chicago on March 2. On the 29th and 30th of the same month a two days' convention was held in New York City.[1] There were at this time in use, at least by several of the manufacturers of sanitary enameled ware, three competing patents for certain tools used in the trade known as "the dredger for pulverulent material," "the pneumatic sieve," and "the enameling powder distributer."

These three patents were owned by the Standard Sanitary Manufacturing Company, the J. L. Mott Iron Works and the L. Wolff Manufacturing Company. Tho bearing the above mentioned different names, all were in fact competing[2] with one another, being used in the process of manufacture for identically the same purposes.[3] It is well to bear in mind the fact also that no one of these patents is essential to the manufacture of sanitary enameled ware, tho all are unquestionably useful and valuable.

At the meeting of the trade on February 1st, a resale plan for its products was discussed. At that

[1] Op. cit. United States v. Standard Sanitary Manufacturing Company. Brief for United States, p. 30.

[2] United States v. Standard Sanitary Manufacturing Company. Petition in Equity in the United States Circuit Court, District of Maryland, p. 15.

[3] In the process of the manufacture of enameled iron ware the ware is at first given a coat of "slush" or enamel in a liquid form. The article is then placed in a furnace and raised to a red heat, by which process the enamel is burnt upon the base. While still glowing with heat powdered enamel is sprinkled upon it and the article is then returned to the furnace. It is usually withdrawn, sprinkled again, and reheated to fuse the enamel. Tho of course the process may be repeated indefinitely, two coats of powder are ordinarily sufficient. After the third reheating the ware is allowed to cool and is then ready for the finishing process.

Before invention of the three devices above referred to, it had been customary to sprinkle on the powder by means of a sieve or sifter to which was attached a handle. The powder was sifted over the surface of the article by tapping on the handle of such sieve or sifter with a piece of iron. Later the handle of the sieve was supported from the ceiling by a counterbalance. In essence the new patents differed from the older unpatented dredge merely in the fact that the tapping was done automatically instead of by hand.

meeting or shortly after an assignment and licensing scheme was also decided upon. It was determined that the three patents should be assigned by the three companies then owning them to E. L. Weyman, each for a nominal consideration and subject to re-assignment after a short period of time at the demand of the assignor.[1] After the Chicago meeting on March 2d, Weyman prepared the rough draft of a licensing arrangement or agreement to be entered into by the various concerns, and on March 30th, the second day of the convention in New York City, a resolution was adopted providing that the matter of a license arrangement and resale agreement should be referred to a special committee of five members to be known as the Price and Schedule Committee. The committee was to interview the various manufacturers and to obtain their consent to the agreement, which was to become binding and effective upon all whenever the consent of 85 per cent of the production had been secured.[2] On April 8th, the Price Committee, consisting of Messrs. Torrance, Hoelscher, Cline, Barnes, and Gates, went into session at the Colonial Hotel in the town of Mount Clemens, Michigan,[3] and sat till the 14th. On the 16th, Weyman was able to inform all of the manufacturers by letter that the Committee had gone into all of the details of the license agreement, making such changes as seemed advisable, and that the manufacturers could expect to receive notice the first week in May of a meeting to be held in New York City for the purpose of executing final license

[1] Op. cit. United States v. Standard Sanitary Manufacturing Company. Petition in Equity, p. 15.

[2] Cf. "Resolution," Exhibit 1, ibid., p. 24.

[3] Op. cit. United States v. Standard Sanitary Manufacturing Company. November term, 1910. A True Bill No. 5164, in the District Court of the United States for the Eastern District of Michigan, pp. 32–33.

agreement papers. The letter requested that the manufacturers should come prepared to sign the agreements or send such principals as might have the authority to conclude the matter.[1]

On the fourth day of May, the Standard Sanitary Manufacturing Company "assigned, sold, and set over" to Edward L. Weyman its patent rights to the Arrott dredger for pulverulent material, subject to reassignment at the end of two years.[2] On the fifth, the J. L. Mott Iron Works and the L. Wolff Manufacturing Company did likewise with their patent rights to the Dithbridge Pneumatic Sieve and the Lindsay Enameling Powder Distributer respectively.[3] Weyman himself possessed no funds and the Standard Sanitary Manufacturing Company loaned to him on May 2d, one hundred shares of its stock upon the security of which he negotiated a loan from a Detroit bank for $7,000. Upon this amount he then drew checks to the Standard, Mott, and Wolff Companies respectively for $5,000,[4] $350 and $500, to pay for the rights thus assigned to him.[5] On the sixth day of the same month, thirteen manufacturers met in New York City and affixed their signatures to the agreement that made the combination effective on June 1st. Subsequently, in May or July, three other manufacturers signed like contracts.

Under the terms of this arrangement the various concerns forming the combination agreed to pay on the sixth day of each month for use of the patents

[1] Cf. Letter of Weyman, Exhibit No. 4. Op. cit. United States v. Standard Sanitary Manufacturing Company. Petition in Equity, pp. 32–34.

[2] "Agreement," Exhibit No. 5, ibid., pp. 35–36.

[3] Op. cit. United States v. Standard Sanitary Manufacturing Company, No. 17. Brief, p. 34.

[4] This patent cost the Standard Manufacturing Company, $35,000.

[5] Op. cit. United States v. Standard Sanitary Manufacturing Company, No. 17. Brief, p. 35.

a royalty of five dollars on each furnace in operation during the preceding month. All furnaces were to be considered as in operation each day unless shut down for more than six consecutive days. The licensee was to send to the licensor a sworn statement showing the number of furnaces owned at the beginning of each month covered by the report and also the number of days in which the furnaces were operated.[1] It was further agreed and understood that the licensee had the privilege of quoting only such additional discounts from the regular selling prices to jobbers as might be established by the licensor.[2] But in such establishment of prices, the licensor on his part agreed to employ a commission of six persons, of which body he himself should be one, the other five to be designated by a majority of the parties holding licenses. Alone he could make no change in the prices and discounts but could do so only with the approval of the majority of the members of the commission.[3] This system, it is interesting to note, greatly resembles that employed by the Cotton Bagging Combination two decades earlier.[4]

At the end of the fourth month of the operation of the new combination, if it appeared that a licensee had maintained the terms of the agreement, he was to be rebated 80 per cent of the royalties which he had paid for the license privilege for the first month only.

[1] "License Agreement," Section 4. Exhibit No. 8. Op. cit. United States v. Standard Sanitary Manufacturing Company. Petition in Equity, p. 44.

[2] Ibid., Section 5, p. 45. Certain of the smaller manufacturers were allowed preferential discounts on sales to jobbers below the selling prices established by the licensor.

[3] Ibid., Section 6, p. 46.

[4] In the Bagging Combination of 1888, L. Waterbury and Company fixed the sales prices at which bagging was to be sold by seven other bagging concerns, parties to the combination. These prices were determined in this case by the majority vote of the seven parties. The Waterbury people had no voice therein. Cf. Contracts A and B of the Bagging Companies, House of Representatives, No. 4165, 50th Congress, 2d Session, pp. 142–144.

At the end of each succeeding month one more month was to be rebated, and failure to comply with the terms of the agreement was punishable by a declaration or forfeiture of any or all of the unpaid rebates. Inasmuch as this system of payments permanently kept the licensor three months' royalties ahead, the penalty might amount in certain instances to a considerable sum of money.[1] The agreement was to continue for two years, but might be terminated under certain conditions either by the licensor or the licensee.[2]

On June 3d, Weyman addressed the jobbing trade in a letter, the essence of which was that it would be impossible to sell licensed ware to anyone who had not executed the jobbers' contract, a copy of which Weyman was thoughtful enough to enclose.[3] The agreement with the jobbers provided that the manufacturers would sell to them at discounts varying from five to seven and one-half per cent from the resale prices which were established in the schedules for licensed ware.[4] Each schedule, moreover, contained two sets of prices, one for car load and one for less than car load lots, the latter price being five and one-half per cent higher than the former. The country was divided into eleven zones, and the jobber was required to sell at the prices established in a given zone, without reference to the point of purchase.[5] This part of the arrangement meant that if the jobber sold outside of his own zone he must observe the prices established in the zone in which he sold.

If all the conditions of the agreement were complied with, and the jobber confined his purchases to licensed

[1] "License Agreement," Exhibit No. 8. Op. cit. United States v. Standard Sanitary Manufacturing Company. Petition in Equity, pp. 46–47.

[2] Ibid., Sections 14–15.

[3] "Letter to the Jobbing Trade," Exhibit No. 11, ibid., pp. 62–66.

[4] "Jobbers' License Agreement," Exhibit No. 9, ibid., p. 51.

[5] Ibid., p. 51.

manufacturers, he was allowed a five per cent rebate,[1] and was also allowed a second rebate for large purchases as follows: —[2]

$10,000.....2½%	$25,000.....4%
$15,000.....3%	$30,000.....5%
$20,000.....3½%	

The jobber further agreed to maintain strictly the resale prices of all ware and not to "purchase, sell, advertise, solicit orders for, or in any way handle or deal in sanitary enameled iron ware of any manufacturer not licensed under the letters patent"[3] above referred to unless he should receive authority from Weyman so to do. Under these contracts Weyman estimated in his statements to the jobbing trade that the jobbing profit would be as follows: —

ESTIMATED PROFITS OF THE JOBBING TRADE[4]

On Schedules Nos.	Difference between C. L. and less than C. L. Prices	Resale Discount	Discount for maintaining price agreement	Quantity rebates	Total Profit on sales prices
	%	%	%	%	%
1 and 4	5½	7½	5	2½–5	19–21
2, 3, 4½					
5, 6	5½	5	5	2½–5	17–19

Breach of the agreement gave to Weyman the right to cancel immediately the contract with the jobber and all unfilled orders, and to withhold all rebates. Jobbers were expressly given notice that in case of their failure to live up to the terms of their agreement

[1] "Jobbers' License Agreement," Section 7, Exhibit No. 9. United States v. Standard Sanitary Manufacturing Company. Op. cit. Petition in Equity, p. 52.

[2] Ibid., p. 53.

[3] Ibid., p. 54.

[4] "Letter to Jobbing Trade," Exhibit No. 11. United States v. Standard Sanitary Manufacturing Company. Op. cit. Petition in Equity, p. 64.

they could not thereafter obtain ware manufactured under the assigned patents from any licensed manufacturer.[1]

Of the three hundred and eighty-nine jobbers whose names were contained in the Blue Book of the jobbing trade introduced as evidence in the suit by the Government, three hundred and forty, or eighty-seven per cent of the total number, signed the jobbers' license agreements, as did also forty-eight smaller jobbers not listed in the book.[2] It was claimed by the secretary of one of the independent companies that the price list of the combination showed increases of from one to forty-five per cent. This was based upon a tabulation made by him from the manufacturers' official price list.[3] The combination had scarcely begun operation before it was attacked by the Federal Government in both the states of Maryland and Michigan, as being in violation of the Sherman Act. On the 13th day of October, 1911, the Circuit Court of the United States for the District of Maryland handed down a decree granting injunctive relief as prayed for by the Government. The Michigan proceedings, criminal in character, are still pending at the time of this writing.

VI. The National Cash Register Company

The National Cash Register Company has been introduced into this study chiefly as a striking example of unfair methods of competition. This corporation has probably, — the Standard Oil Company alone excepted, — been the most predatory in its methods

[1] "License Agreement," Exhibit No. 9, ibid., p. 55.

[2] Op. cit. United States v. Standard Sanitary Manufacturing Company. Brief for United States, p. 45.

[3] Ibid., p. 45.

of any of the trusts and combinations whose history is known. Largely through these methods it was able to obtain a monopolistic control over the trade and commerce in cash registers amounting to ninety-five per cent of the total business. The bases of the suit against it by the Government are the allegations of conspiracy, attempt to monopolize, and monopoly.

About 1882 the National Cash Register Company was organized in the State of Ohio under the name of National Manufacturing Company, for the purpose of manufacturing and selling cash registers. In 1884, or thereabouts John H. Patterson and his associates purchased a majority of its stock and then changed the name to its present title. In 1889 the Patterson interests incorporated a concern of the same name in the State of New Jersey to which were transferred the assets, property, and business of the Ohio concern. In 1906, the present Company was organized by the same interests.[1]

The history of the corporation as a corporation has been of an uneventful character and its chief interest lies, as has been stated above, in its strikingly unfair methods of competition. According to the Government's petition, John H. Patterson and the officers of the Company determined definitely as early as 1890 to suppress and prevent all competition whatsoever in the manufacture and sale of cash registers and to monopolize the same.[2] The chief agency employed for this purpose was a department which was known as the "Competition Department" or the "Ways and Means" Department, also designated by various other titles. It consisted of an active head

[1] United States v. National Cash Register Company. In Equity, No. 6802, in the Circuit Court of United States for Southern District of Ohio. Petition, pp. 10–11.

[2] Op. cit. United States v. National Cash Register Company. Petition in Equity, pp. 12–15.

with other officers and departmental managers, and employed a force of men whose duty it was, so far as possible, to destroy the business of competitors. These men were known as "knock out" men, and their special duty was to interfere with the negotiations of sale contracts by competitors.[1] Agents were directly hired by the corporations to spy upon business of competitors and to secure any information that they could, reporting the same to the aforesaid department.[2] Still other agents were entrusted with the duty of securing names of customers of competing concerns, the information being duly utilized to secure the rescission of contracts. Employees of competing firms were bought up, and the agents of the National Cash Register Company were instructed in the use of competing registers so that they might be able to exhibit their defects.[3]

Cash registers were built by the National Cash Register Company resembling in a general way the registers of competitors. These were utilized for the sole purpose of competition and were sold at ruinous prices, their manufacture and sale being discontinued as soon as the competitor had been eliminated. Whenever a new concern lifted its head these machines were put into the field. At the same time the corporation advertised and offered for sale the registers of competitors at prices below the cost of manufacture and below the actual cost of such machines. The agents of the corporation had secured them from dealers in, and agents of, competing registers, who had been forced out of business, and from merchants who had obtained them of these dealers and agents. In order

[1] Op. cit. United States v. National Cash Register Company. Petition in Equity, p. 14.

[2] Ibid., pp. 14–15.

[3] Ibid., p. 15.

to force competing dealers and agents out of business cash register agencies of the National Company were established in the neighborhood of such dealers, and the registers of that corporation were then advertised and sold at such prices as frequently to eliminate rival sellers from the business. Threats of the establishment of these agencies were also made to dealers in competing machines, often causing the withdrawal of the latter from business through fear of financial loss.[1]

From time to time the corporation held meetings of its officers and agents at which plans were discussed and formulated looking to the elimination of all competition, and the establishment of a complete monopoly. Agents were furnished with letters of instruction in regard to the obstruction and elimination of the trade of competitors. From time to time there was published by the National Cash Register Company a paper known as the *N. C. R.* which was distributed to its agents as confidential matter. The directions of officers and managers, their speeches and statements, were therein published. Often this paper announced the intention to monopolize the cash register business. Agents were threatened with dismissal, and were dismissed, for allowing competition to exist in their territory.[2]

A common practice of the National Cash Register Company seems to have been the old one of the operation of bogus independent companies. Concerns would be purchased secretly and maintained in pretended competition with the National Cash Register Company, thus deceiving competitors and oftentimes, — so at least it is alleged, — resulting in the acquisition by the National Cash Register Company from such com-

[1] Op. cit. United States v. National Cash Register Company. Petition in Equity, pp. 18–19.

[2] Ibid., p. 20.

petitors of much valuable information in regard to the business of the latter.[1]

In order so far as possible to forestall competition, the National Cash Register Company has pursued consistently the policy of acquiring new cash register inventions, and it is also alleged that by intimidation the corporation has succeeded in preventing still other inventors from putting their applications upon the market.[2]

In the factory of the concern at Dayton, Ohio, a display room was maintained known as the "Grave Yard" or "Midway." In this room were exhibited the registers of competing companies which had been eliminated from the field. Display cards gave data showing the name of company, the date of closing out, amount of money lost, etc. Manufacturers, merchants, and other visitors were shown this room and this was one of the prominent features of the intimidation policy employed by the National Cash Register Company.[3] Another was the publication and distribution of lists purporting to give the names of concerns eliminated from the cash register business. One list issued in January, 1910, reads in part as follows:—

"Within the past fifteen years, 158 cash register companies have been organized to compete with the National Cash Register Company. Of these, 153 have failed in business. Their combined capital was $5,735,000. Their combined loss was $1,970,000. According to the sworn affidavits of its officers, the Boston Cash Register Company alone lost $192,750.08. Of every 20 cash registers sold, 19 are Nationals."[4]

[1] Op. cit. United States v. National Cash Register Company. Petition in Equity, p. 22.

[2] Ibid., p. 22.

[3] Ibid., p. 21.

[4] Ibid., p. 25.

An apparently new method of competition was devised by the National Cash Register Company in the institution of suits at law or equity for the purpose of harassing competitors. These suits, it is alleged, were often entirely unwarranted and unjustifiable. They involved the competitors in heavy expenses the effect of which was to enable the National Cash Register Company the sooner to crush out and eliminate their competition.[1]

VII. Combinations of Wholesale and Retail Dealers

In considering the Colorado and Wyoming and the Northwestern Lumber Dealers' Associations, the Michigan and the Eastern Retail Lumber Dealers' Associations, the Pacific Coast Plumbing Association, and the Southern Wholesale Grocers' Association, we examine a type of combination radically differing from most of those which we have so far studied. The principal difference lies in the fact that these latter combinations are no longer combinations of manufacturers, but are pools of individuals, firms, and corporations engaged in the wholesale and retail trade.

Speaking in general terms, the lumber trade, like many lines of manufactured goods, passes through three sets of hands before reaching the consumer; that is, manufacturer, wholesaler, and last of all the retailer. Manufacturers of lumber receive that commodity in the form of logs from the forest and saw it into the sizes and lengths required by the trade. The wholesale merchants known as the wholesalers and jobbers purchase the products of this manufacture and distribute it to the retailer. The wholesale

[1] Op. cit. United States v. National Cash Register Company. Petition in Equity, p. 23.

merchants are usually located either in or near the large lumber markets, sometimes maintain yards for receiving and storing lumber products purchased from the manufacturers, and sometimes handle shipments of lumber direct from the mills to the retailer, upon receipt of orders from retail customers. In the latter case the jobber in each instance serves merely as an intermediary and does not handle the lumber itself since he maintains no yard. Retailers maintain yards over the entire country at various places, in which are stored supplies of lumber purchased by them to fulfil the demand existing in their various localities.

Besides these three classes engaged in the lumber trade there are the mail order houses, *i. e.*, large commercial houses in various large cities throughout the United States which sell, in addition to other kinds of merchandise, large quantities of lumber. There are also a large number of so-called Farmers' Co-operative Unions and Yards.

Consumers of lumber may be divided into four distinct classes: —

1. The contracting builder or operator in construction work who utilizes lumber in all sorts of such work.
2. The converter who manufactures furniture and "trim."
3. The United States Government and in some cases municipalities and railroads.
4. The small consumer of lumber who uses the same for small buildings, for repair, and for construction work.[1]

The method of operation employed by the various retail dealers' associations has been substantially

[1] United States of America v. E. E. Hartwick and Others. Original Petition in the Circuit Court of the United States for the Eastern District of Michigan, Southern Division, pp. 5–9.

the same, tho each exhibits some slight variation from the methods of any other. Of the above mentioned combinations engaged in the lumber trade, the Michigan Retail Lumber Dealers' Association is the oldest. It was organized about 1888 or 1889 as a voluntary unincorporated association of the retail dealers within the state of Michigan. The members of the association agreed to and did classify arbitrarily the retail lumber dealers of that state, by providing that any person, firm, or corporation was to be regarded as a legitimate lumber dealer who was regularly engaged in the lumber trade and at all times carried an assorted stock of lumber and "trim" commensurate with the demands of his community (75,000 feet being generally regarded as a minimum), who was in the business for the purpose of selling at retail, and who kept an office during the regular business hours with a person in charge capable of attending to the wants of customers.[1]

Any member of the association who considered that he had just cause of complaint against any wholesaler or manufacturer could make complaint in writing to the secretary of the association, giving such information in regard to the shipment as might be obtainable. Exceptions were made in the case of sales to manufacturers where the lumber was actually used by them, in the case of railroads and transportation companies, and finally of "trim" in the case of hardware merchants who kept a regular stock of goods. In all these cases, however, it was understood and agreed that shipments were to be in not less than carload lots.[2]

[1] Exhibit A, "Constitution of Michigan Retail Lumber Dealers' Association," Article 1, Section 1. Op. cit. United States v. Hartwick, p. 43.

[2] Ibid., Article 2, Section 5, p. 46.

The secretary of the association, upon receipt of complaints, was charged with the duty of notifying the party offending, or if the shipment was made by an agent or broker, was required to take the matter up with his principal.[1] If the offending manufacturer or wholesaler were a member of any association of wholesalers, the secretary took the case up with the secretary of that association, requesting the presentation of the claim to the party complained against and the adjustment thereof. In case of failure to adjust by the efforts of both associations, the claim was to be settled by a board of arbitration of three members. One of these was to be selected by each association and the two in turn selected a third.[2]

Such complaints were to be made whenever any wholesaler, manufacturer, dealer, or agent should sell to any person not a regular dealer, as defined. Claims were not to exceed ten per cent of the value, at the point of shipment,[3] of the lumber so sold. If the settlement of the claim even after arbitration was refused by the manufacturer or wholesale dealer, members of the retail association were forbidden to deal with this manufacturer or wholesaler upon penalty of expulsion from the retail association.[4] "Commission men" selling to any person not a regular dealer were to be treated as manufacturers or wholesalers, while any wholesaler, dealer, or manufacturer selling to a "commission man" or shipping to persons not regular dealers, was to be held liable as if he himself had made the sale.[5]

[1] "Constitution of Michigan Retail Lumber Dealers' Association," Section 6, pp. 46–47.

[2] Ibid., Section 8, pp. 47–48.

[3] Cf. By-Laws, Section 3. Op. cit. United States v. Hartwick, Original Petition, pp. 50–51.

[4] Ibid., Section 3, p. 51.

[5] Ibid., Sections 5 and 6, p. 52.

It was further provided that persons who quoted prices, or sold or shipped to other than regular dealers, in the territories of the association in which such persons had no yards, should be regarded as "poachers," and when they were reported in the membership and notification sheet, they were to be regarded as consumers at points other than those where they might chance to own yards.[1] Wholesalers and manufacturers who made shipments to them in the territory of any member of the retail association were to be regarded as having sold or shipped to a consumer.[2]

Sometime in 1900 or 1901 the Michigan Association entered into correspondence and conferences with other associations of retail dealers throughout the country as to means of preventing competition between manufacturers and jobbers on the one hand and retail dealers on the other. In March, 1902, as a result of such conferences, the secretaries of the retail lumber dealers' associations throughout the country became a corporation under the laws of Illinois, known as the Lumber Secretaries' Bureau of Information. At that time there were represented in it, besides the Michigan Association, the Union Association of Ohio, the Southwestern and Northwestern Associations, the Indiana Association, and the Illinois Association. It gradually expanded to include many others.[3] Not merely was there co-operation between the Lumber Secretaries' Bureau and the Retailers' Associations but there

[1] In other words, retailers were expected to confine their sales to territory immediately surrounding their own yards.

[2] "Constitution of Michigan Retail Lumber Dealers' Association," Article 3, Section 3, pp. 48–49.

[3] United States v. Colorado and Wyoming Lumber Dealers' Association, Bill of Complaint in Equity in United States Circuit Court for the District of Colorado, Eighth Judicial Circuit, p. 17. Between 1902 and 1911 this corporation was joined by the following associations: Wisconsin Association, Colorado and Wyoming Association, Nebraska Association, Western Association, Retail Association of Alabama and Tennessee, Mississippi and Louisiana Association, Association of Pennsylvania, Association of Texas, Association of West Tennessee and Kentucky.

was also co-operation with the lumber trade journals, the *Mississippi Valley Lumberman* and the *Scout.* In these papers there appeared from time to time items of information showing shipments of lumber from manufacturers and wholesalers to consumers;[1] the lists, so published, operated as a boycott. Circulars were also issued by these lumber trade publications containing information of a like character and also lists of "poachers."[2]

About 1904 Luke W. Boyce began the conduct of a detective bureau known as the Northwestern Information Bureau. Boyce was a regularly paid employee of the Northwestern Lumbermen's Association and with a force of assistants was engaged in ferreting out information respecting shipments from wholesalers to consumers. This information was furnished to the association employing him, which in turn furnished it to the Lumber Secretaries' Bureau of Information and the Mississippi Valley Lumbermen.[3]

Substantially identical in character and purpose with the Michigan Association were the Northwestern Association and the Colorado and Wyoming Association. It is necessary to go a step further, however, and examine the interesting methods and machinery employed by these lumber combinations in the prosecution of the campaign against the "unethical shipments" above described. In June, 1909, the American Lumber Trade Congress held a meeting in Chicago and there drew up a code of ethics which was intended to

[1] Cf. op. cit. United States v. Hartwick, Original Petition, pp. 29–30, and also United States v. Willard G. Hollis and Others, Petition in Equity in the Circuit Court of the United States for District of Minnesota, p. 39, and United States v. Arthur L. Holmes, Indictment No. 4750, in the District Court of the United States for the Northern District of Illinois, pp. 17–20.

[2] Ibid., United States v. Willard G. Hollis, pp. 59–62; United States v. Holmes, pp. 26–34.

[3] Op. cit. United States v. Hollis, p. 54.

govern all branches of the lumber trade in selling, except as to sales by the retailer to the consumer. The code of ethics provided that "unless a buyer is rated and in good standing, as shown by the well known lumber credit agencies, no orders shall be binding on the seller unless such credit and good standing shall have been satisfactorily proven to the seller." [1]

This practically confined the rating of all buyers of lumber and lumber products to the "Red Book" and the "Blue Book" which are published, the one in Chicago, and the other in St. Louis.[2] What this resulted in was simply that a buyer's name appeared in either of these rating books as a retailer whenever in fact he was a consumer, mail order house, or farmers' co-operative association, since the retail associations would insist upon such a buyer's name being stricken from the list or else that he should be designated as a consumer.[3]

The operation of the Eastern States Retail Lumber Dealers' Association was somewhat different from that of the three combinations in the Lumber Trade just considered, tho the principle involved was precisely the same. In the case of the Eastern Organization, the methods were less complicated and the general operation much simpler than in the western and middle western associations. This was due to the system of close co-operation existing between the wholesalers and the retailers in the former case.

[1] Op. cit. United States v. Hartwick, Original Petition, pp. 19–20.

[2] The "Blue Book" is published by the National Lumber Credit Manufacturers' Corporation, a corporation of the State of Virginia, the stock of which is either owned or fully controlled by this association, which is composed of fifteen or more of the largest manufacturers' associations of the United States. The "Red Book" is published by the Lumberman's Credit Association, a corporation of the State of Illinois. Cf. United States v. Willard G. Hollis and Others. Petition in Equity in the Circuit Court of United States for District of Minnesota, p. 34.

[3] Op. cit. United States v. Hartwick. Original Petition, pp. 20–21.

The Eastern States Retail Dealers' Association was organized in New Haven in September, 1902, and became a membership corporation under the laws of the state of New York in October of the same year. Its membership was composed of retail lumber dealers who were elected as representatives and delegates of various state lumber trade associations in the eastern states. The objects of the state organizations varied somewhat, but in general it may be said that they were to prevent so called "unethical" shipments by means of classification such as was used in the west.[1] The National Wholesale Lumber Dealers' Association is a membership corporation of the state of New York, and is composed of manufacturers, wholesale and retail houses, and jobbers, operating in all the states east of the Mississippi River and also in California and Canada.[2]

Before the formation of the Eastern Association, there had been on the part of various associations later composing that corporation and some of the western associations as well, combinations to secure, in conjunction with the National Associations of Wholesalers, such a classification of the lumber trade as would operate to confine the trade of the consumer to the retailer and that of the retailer to the wholesaler. As early as 1899 the Boston agreement was adopted by certain retail associations and the National Wholesale Association, authorizing the latter to formulate rules of classification of lumber dealers as follows: —

1. Manufacturers.
2. Wholesale dealers and agents.
3. Retail dealers and other legitimate customers of the wholesale trade.

[1] United States v. Eastern Retail Lumber Dealers' Association. Original Petition in United States Circuit Court for the Southern District of New York, pp. 18–19.

[2] Ibid., p. 37.

The classification was to be made along the lines of the rules of the trade in the various states, and arbitration was provided for in the case of the failure of the wholesaler and the retailer to agree.[1] It was also voted that the National Association take up and consider the evils from which the lumber trade was suffering, viz.: —

1. Sales by manufacturers to consumers.
2. Sales by brokers, etc., to consumers.
3. Sales and quotations by so-called retail dealers to consumers through agents and by methods used by the wholesaler in soliciting trade from the wholesalers.

It was further agreed that the National Association devise a plan that would, with the co-operation of the Retail Associations, control such individuals and concerns as well as a plan whereby those reported by the state association as selling to consumers, should be reported both to the wholesale trade and manufacturers and required to conform to legitimate methods of business. Yet another resolution provided that in case the National Association was able to comply with these requests, retailers would, so far as possible, pledge themselves to buy only of the National Wholesalers' Association.[2]

Subsequently at the meetings of 1900 and 1901 the Baltimore and Pittsburg amendments to the Boston agreement were passed, providing for a joint classification and embodying provisions tending to strengthen the co-operation between the parties to the agreement.[3]

[1] Op. cit. United States v. Eastern Retail Dealers' Association. Cf. Exhibit F, Boston Agreement, pp. 80–81.

[2] Ibid., pp. 80–81.

[3] Cf. Agreements, op. cit. United States v. Eastern Retail Dealers' Association, pp. 83–87.

In 1903, the Boston agreement was nominally withdrawn as a result of disagreement between the Eastern Retail and National Wholesale Associations in regard to classifications,[1] but in spite of this fact the retail associations continued to classify and the National Association continued to accept their classifications throughout 1903 and 1904. All available documents tend to prove that such co-operation has continued to exist between the two associations down to the present time.

Information furnished by officers of the retail associations was published and circulated by the National Wholesalers' Association in a publication called " List C " which was issued periodically up to about September 25, 1907, when it was discontinued. The information contained in this list, however, continued to be furnished by the National Association to dealers upon application. The object of the list and information was to prevent sales by wholesalers to anyone upon the list. Information in regard to concerns placed upon this list, and after its discontinuance enumerated in the letters sent out by the National Association, was obtained by correspondence and by circulars addressed to various retailers' associations.[2]

In 1908 at the Washington meeting of the National Wholesalers' Association a resolution was adopted to the effect that the relations established by the Boston agreement in regard to classifications should be continued so far as consistent with a fair consideration of all interests involved.[3] The National Association from time to time issued circulars listing and publishing persons reported by retail associations, which

[1] Op. cit. United States v. Eastern Retail Dealers' Association, pp. 45–49.

[2] Ibid., pp. 50–51.

[3] Ibid., p. 53.

were known as "Yes" and "No" lists from the fact that they were merely lists of names with one or the other of these words at the bottom, and constituted statements as to whether or not such concerns as were enumerated should be regarded as legitimate retail dealers.[1]

In its most essential details the Pacific Coast Plumbing Supply Association differs but little from the Lumber Trade Associations just described. Its existence dates from about the first of January, 1907.[2] In its restraint of trade it made extensive use of the "Blue Book" of the Plumbing Trade. Members of the combination refused to order or to buy from such manufacturers of plumbing supplies as sold or shipped to persons in Washington, California, and Oregon who were not members of the association and listed in the said "Blue Book." This book in all essential respects corresponded to the "Red" and "Blue Books" of the Lumber Trade. It contained arbitrary definitions of a manufacturer and a jobber, and the list was presumed to inform all the manufacturers who were the legitimate jobbers of plumbing supplies.[3]

The Pacific Coast Association further exercised an arbitrary discretion as to what individuals and concerns engaged on the Pacific Coast in the plumbing supply business should be regarded as jobbers. Ratings as such could only be obtained with the consent of a majority of the jobbers belonging to the association who were doing business in any locality where the given individual or concern desired to take up its location. This power, it is alleged, was used arbi-

[1] Op. cit. United States v. Eastern Retail Dealers' Association, p. 54.

[2] United States v. Pacific Coast Plumbing Supply Association and Others. In the Circuit Court of United States for the Southern District of California, Petition in Equity, p. 11.

[3] Ibid., pp. 13–14.

trarily solely in order to prevent any increase in the number of jobbing houses in these states.[1]

In like manner as the lumber dealers utilized the Lumber Secretaries' Bureau of Information for a similar purpose, the National Committee of the Confederated Supply Association, and its officers and agents, were made use of to disseminate information among the members of the association, and also among manufacturers, relative to those manufacturers who sold to persons and concerns in the states of California, Washington, and Oregon and were not members of the Plumbing Association.[2] The matter of such shipments was reported by the Secretary of the Association, and the Secretary of the National Committee then took up the matter with the manufacturer.[3] Through these methods the Government alleges it was possible for the Pacific Coast Association to control 90 per cent of the jobbing trade in the states of California, Washington, and Oregon.[4]

The Southern Wholesale Grocers' Association made use of the "Green Book" published by the Association and entitled *Official List of the Wholesale Grocers of Alabama, Arkansas, District of Columbia, Florida, Georgia, Indian Territory, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia* — for the same purpose as the plumbing jobbers' combination utilized the "Blue Book." The Grocers' Combination also apparently endeavored to fix a limited selling price at which a commodity might be sold, and to secure the agreement of manufacturers to set such a limited selling price. The jobbers then demanded of the

[1] Op. cit. United States v. Pacific Coast Plumbing Supply Association and Others, p. 14.

[2] Ibid., pp. 16–17. [3] Ibid., pp. 16–17. [4] Ibid., p. 15.

manufacturers rebates for the maintenance of such prices.[1] On October 17, 1911, a decree of injunction, to which all parties consented, was handed down in the Circuit Court of the United States for the Northern District of Alabama, enjoining the Southern Wholesale Grocers' Association from the continuance of such methods.

VIII. Conclusion

So much stress has been laid upon the Tobacco and Standard Oil decisions, so much emphasis given to the fact that the dissolutions of these two great combinations have left them in practically the same situation as before, that other suits brought by the Government have been completely overshadowed. To those obsessed with the idea that combination is a natural phenomenon and that competition is essentially anarchical and *ipso facto* undesirable, and to those who desire the repeal or amendment of the Sherman Act, the method of dissolution employed in the case of these conspicuous corporations is a proof of the impossibility of real competition, the absolute necessity of combination, and the general uselessness of the Sherman Act. While not in the least denying the existence of the tendency to co-operation in business, it is the belief of the writer that the fundamental basis upon which it rests is unreasonable restraint of trade. In other words, if the Sherman Act can eliminate certain piratical and predatory methods of competition, a large proportion of the "natural" tendency toward combination would dissolve into the thin air.

[1] United States v. Southern Wholesale Grocers' Association et al. In Equity, No. 205. In the Circuit Court of the United States for Northern District of Alabama, Decree of Injunction, pp. 5–7.

It is largely for the purpose of throwing light upon this question of combination versus competition that the present article has been written. Are all of the members of the group just described examples of a natural tendency, or in some cases is the basis of their existence to be found in altogether different circumstances? If, as the writer believes, a very large proportion of the tendency to combination rests not upon the natural desire to co-operate but rather upon an equally natural desire to make money at whatever cost, the argument in favor of combination becomes certainly less strong. Somebody has remarked that the way to enforce a law is to put some one in jail. There may be a germ of truth in this argument. At any rate, why not give enforcement and strict enforcement of the Sherman Act under the "reasonable" ruling of the Supreme Court a thoro trial?

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HENRY C. CAREY'S ATTITUDE TOWARD THE RICARDIAN THEORY OF RENT

SUMMARY

Carey's four arguments against Malthusianism, 644. — Effect of environment on his thought, 647. — Relationship of wealth, utility, capital, value, and cost of reproduction, 648. — The two arguments on rent: (*a*) Land is capital, rents grow proportionately less; (*b*) The natural order of cultivation, 651. — Three possible interpretations of Carey on returns, 659. — An argument by the writer on interrelationships in the problem of proportionality, 666. — Carey and Ricardo on returns, 669. — Conclusion, 671.

THE Ricardian theory of rent met an earnest, honest, and forcible critic in H. C. Carey. Carey was radical, bold, sweeping, and dogmatic. He made a spirited tilt against Ricardian rent and seemed in his happiest vein when replying to his dearest foe, Mr. Malthus.

The purpose of this paper is to present briefly Carey's theory of rent and to contrast the views of these famous economists, especially on diminishing returns. The present writer finds, contrary to the general opinion, that Carey never denied the theory of diminishing returns in the sense that Ricardo taught it.

In order to follow Carey's criticism of Ricardian rent I shall briefly review Carey's arguments on population. Carey overlooked the social phenomena that followed the Second Hundred Years' War between England and France. He claimed that the origin of the theory of population that Ricardo had in mind, Malthusianism, was to be found in the commercial policy of England.[1] Following in the lead of the

[1] Carey, Principles of Social Science (Philadelphia, 1858), vol. i, p. 464.

American economists, Rae,[1] Wayland,[2] Vethake,[3] Cardozo,[4] and Phillips,[5] also Senior[6] in England, Mr. Carey argues at length to prove that Malthus' geometrical and arithmetrical ratios are impossible.[7] God in his all-goodness, reasons Carey, provides for man. He admits that men perish. This, however, is not due to the niggardliness of nature, but to the insufficiency of men.[8]

Chemistry teaches, he argues, that a dense population is necessary for the well-being of man.[9] Space will not permit a full presentation of his arguments under this head of his discussion. Because of the increase in population, the growth of association, capital, and skill, which result, will cause the land to yield more food; and by reason of a law of substitution which accompanies the advancement of civilization, man comes to have less need for the products of the land. Man becomes more and more dependent on plant life. Plants, on their side, must have carbonic acid gas, which is furnished them by the breath of animals. A dense population will supply the needed animal breath, and animals, a discordant element in his principle of association, will gradually disappear. Thus, man producing the carbonic acid gas and plants the oxygen, give us an example of that "perfect" economic harmony which runs through his writings.

Carey's last and most important argument is that

[1] Rae, John, The Sociological Theory of Capital (N. Y., 1905), p. 392.

[2] Wayland, F., Elements of Political Economy (Boston, 1859), p. 302.

[3] Vethake, Henry, The Principles of Political Economy (Philadelphia, 1838), p. 116.

[4] Cardozo, J. N., Notes on Political Economy (Charleston, S. C., 1826), pp. 35–36.

[5] Phillips, Willard, A Manual of Political Economy (Boston, 1828), p. 139.

[6] Senior, N. W., Two Lectures on Population (London, 1831), Lec. II, pp. 46–52.

[7] Social Science, vol. iii, p. 267, and ibid., pp. 349–350.

[8] Ibid., p. 350.

[9] Ibid., pp. 319–320. Cf. ibid., vol. ii, p. 269 — vol. iii, pp. 315–318, 325–327.

man's cerebral and reproductive functions become antagonistic through development. Population is self-regulative. The power to maintain individual life and the power to propagate the species must vary inversely if over-population be avoided. If a race continues to exist, the forces destructive of it and the forces preservative of it must tend toward equilibrium.[1]

In this argument we find Carey's ultimate check to over-population. To read only his first three arguments, one concludes that Carey had in mind no conceivable limit to the propagation of man. Economic historians have, for the most part, overlooked his claim that population is self-regulative. Professor Roscher, for example, maintained that Carey had in mind no check to over-population and cited Carey's *Past, Present, and Future* and *Principles of Social Science* to substantiate his contention.[2] It is true that when, in 1848, he wrote his *Past, Present, and Future*, he had not developed the argument and frankly stated that "the time may arrive when the world will be so fully occupied that there will not be even standing room."[3] But between 1848 and 1858–59, the date when he brought out his *Principles of Social Science*, appeared Herbert Spencer's famous article on population[4] (1852), which supplied Mr. Carey with an ultimate check to over-population, thus rounding out his theory.[5] Carey's argument is that there is no minimum of subsistence margin, nor any over-population problem.[6]

[1] Op. cit., vol. iii, chap. 46.

[2] Roscher, Principles of Political Economy (Chicago, 1882), sec. cclxiii, note 1.

[3] Past, Present, and Future (Philadelphia, 1848), p. 77.

[4] A Theory of Population, deduced from the General Law of Animal Fertility, Westminster Review, April, 1852.

[5] Principles of Social Science, chap. 46.

[6] Professor Haney says that Carey preceded Spencer in this theory. — History of Economic Thought (N. Y., 1911), p. 247. Professor R. E. Thompson also makes this mistake. — Stoddard's Encycl., Amer. supplement to Encycl. Brit., vol. i, p. 722.

In connection with these arguments it may be noted that Carey's American environment was not in conformity with the Maltho-Ricardian formula. Carey wrote voluminously on economic subjects from 1835 to 1879. The achievements of this period in American industrial history were unprecedented. The growth of population and wealth, of factories and industries, of invention and skill was immense in the development of material civilization. During the twenty years following 1830, our railroad mileage grew from 23 miles to 9,021 miles, and the railroad centre was Philadelphia, where lived Carey and most of his American followers. The growth of the agricultural industry was rapid because of superior methods and inventions, increasing population, and manufactures which furnished home markets, good prices for farm products, and division of labor and skill. With the growth of capital and the increase of population was acquired power that enabled society to appropriate the low and swampy but more fertile lands of the valleys.

Conditions encouraged Carey's native optimism, and he gave out the opinion that progress was the normal law of economic life. For the orthodox concept of diminishing returns he substituted the concept of increasing returns over a long period of time. He reversed the order of cultivation as taught by Ricardo. His writings reflect his environment. There was not a time during his career when a larger population would have been undesirable. Increasing numbers were an indication of prosperity. Considering these facts in conjunction with his native optimism, we have a reason for his denial of Malthusianism. That Carey was ultra-optimistic is generally recognized, and I have mentioned this as a reason for his opposition to the teachings of Malthus and Ricardo. Differences

of opinion often find their origin in differences of temperament. The scientist, as such, reaches conclusions only through impersonal reasoning. Man, considered as man, too often has his conclusions biased by his own temperament. The difficulty is that the scientist and the man are inseparable. There being two sides to most questions, there is opportunity for the human element to load the evidence in favor of this contention or that. Ricardo was pessimistic, Carey was optimistic. Ricardo loaded the evidence by the English conditions of 1815; Carey loaded the evidence by the American conditions of 1848.[1] Having mentioned his arguments on population, as well as the industrial and personal conditions that influenced them, I shall follow his approach to the rent problem a little further by briefly presenting certain concepts that are of the substance of the problem itself.

Carey, as we shall see, regards land as a form of capital, and makes rent virtually synonymous with interest.[2] Rent and interest find their origin in the conflict, so to say, between the power of nature's control over man and the power of man's control over nature. In proportion to other shares of the *distribuendum*, rent and interest are high when nature's control is stronger and low when man's control is stronger.

Concepts having to do with man's control over nature are wealth, utility, and capital. "Wealth

[1] The following references help one to appreciate the attitude of early America on population: —

(a) Franklin, A Select Collection of Scarce and Valuable Economical Tracts (ed. by J. R. McCulloch. London, 1859), p. 215.

(b) Smith, Adam, Wealth of Nations (Cannan ed.), vol. i, p. 72.

(c) Everett, A. H., New Ideas on Population (Boston, 1826), chaps. 2–3.

(d) Senior, N. W., Two Lectures on Population (Oxford, 1828 — printed London, 1831), p. 49.

(e) Marshall, A., Principles of Economics, 1910, pp. 321–322, note.

[2] Principles of Political Economy (Philadelphia, 1837), vol. i, pp. 129, 130.

consists in the power to command the always gratuitous services of nature." [1] "Wealth grows with the growth of man's power over nature. The more that growth the more feeble becomes nature's resistance, and the greater is the tendency toward acceleration of progress in the further growth of wealth." [2] "The utility of things is the measure of man's power over nature." [3] "Capital is the instrument by means of which that mastery is acquired." [4] In what does capital consist? Carey says, "At one moment in the form of food; at another, in that of physical and mental force; and, at a third, in that of bows, arrows, canoes, ships, lands, houses, furnaces, and mills." [5] He speaks of "further accumulation of capital in the form of that higher intelligence." [6] Capital, then, is both objective and subjective. Carey is obscure on this point. He considers interest a payment for the use of capital. Land is capital, so it would seem that a payment for the use of land would be interest. Rent, however, is spoken of as a payment for the use of land; so rent and interest would be the same, — interest on land would be rent. Man also is capital. Why, then, would not wages be interest? Wages

[1] Principles of Social Science, vol. i, p. 186. In his miscellaneous works the article "Wealth: of What does It Consist?" The term thus: "Wealth consists of the power to command the services of the always gratuitous forces of nature" (pp. 5–6). Further, "Of all tests of the growth of wealth the most certain is that which is found in the comparative power of a people for the production and consumption of iron." (Ibid., pp. 10–11.) His environment in Philadelphia possibly had something to do with his exalted opinion of the iron industry and his advocacy of protection. The poet Bryant thought Carey's opposition to orthodox economy was due to mercenary motives. (Carey's miscellaneous works — article, Financial Crises: their causes and effects; Bryant quoted pp. 15–16.) T. E. Leslie thought Carey's economy as much a product of Pennsylvania as was its iron and coal. (Fortnightly Review, vol. xxxiv, 1880, p. 503.) Professor Perry was of the same opinion as Leslie. (Political Economy, 18th ed., p. 83.)

[2] Miscellaneous Works. Article, "Wealth: of What does It Consist?" p. 11.

[3] Principles of Social Science, vol. i, p. 179.

[4] Ibid., vol. iii, p. 50.

[5] Ibid.

[6] Ibid.

and interest, however, are regulated by different laws. They move up or down in opposite directions. These remarks are justified by statements throughout his works and by criticisms of him on his confusion of terminology.

Concepts having to do with nature's control over man are value and cost of reproduction. "Value is the measure of the resistance to be overcome in obtaining those commodities or things required for our purposes — of the power of nature over man." [1] In the same chapter we are told that the idea of value "is simply our estimate of the resistance to be overcome, before we can enter upon the possession of the thing desired." [2] This chapter contains expressions of which the following are characteristic; "what are the things to which he attaches the idea of value?" "He attaches no value to the light," "How much is the value he attaches to the chair upon which he sits?" etc., etc.

One of the above definitions is subjective and the other objective. The relative values of commodities are determined by their labor cost of reproduction. "In exchanging, the most obvious mode is to give labor for labor." [3] For short, value : value : : labor cost of reproduction : labor cost of reproduction.[4]

His greatest confusion comes from attributing value to man. Of the utility of man he says, "The greater that utility, the higher is his own value, and the less that of the things he needs. The cost of reproduction

[1] Principles of Social Science, vol. i, p. 158.

[2] Ibid., p. 148.

[3] Ibid., p. 151.

[4] Marshall makes Carey's value a money cost of reproduction concept. Carey himself, on the value of a good, spoke of the human effort required for its reproduction (Cf. Marshall, op. cit., p. 401, Carey, Principles of Social Science, vol. i, p. 151.) Marshall says normal cost of reproduction and normal cost of production are convertible terms. (Ibid., p. 401.)

steadily declining, he himself as steadily rises, every reduction in the value of existing capital being so much added to the value of the man." [1] "The value of man, like that of all other commodities and things, is measured by the cost of reproduction, and not by that of production." [2]

These statements are not in harmony with value as nature's control over man. They indicate that value is man's power over nature. How does this differ from wealth, man's power over nature? How does the idea that a greater utility in man means a higher value in man harmonize with "the two (value and utility) [3] thus move in opposite directions, and are always found existing in the inverse ratio of each other"? [4] Inconsistencies such as these confuse the argument. Yet the general relationship seems to be that value is nature's power over man and that it is limited by cost of reproduction. Wealth is man's power over nature, utility is the measure of this power, and capital consists in the means or instruments which give this power.[5]

Since rent is a payment for the use of land, it is proportionately high or low as the value of the land is high or low. This leads us to the rent problem.

He presents two arguments on rent: [6] (*a*) Land is capital, rents grow proportionately less; (*b*) The natural order of cultivation is from poor land to rich.

[1] Principles of Social Science, vol. iii, p. 111.

[2] Ibid., p. 130.

[3] Parentheses mine.

[4] Principles of Social Science, vol. i, p. 179.

[5] Roscher, Principles of Political Economy, vol. i, sec. 5, note 4.

[6] Principles of Social Science, vol. i, p. v. Speaking of his work of 1837, Carey said of himself, "He had already satisfied himself, that the theory presented for consideration by Mr. Ricardo, not being universally true, had no claim to be so considered; but it was not until ten years later that he was led to remark the fact that it was universally false."

First. Land is capital. The clay through which the farmer guides his plow is subject to exactly the same law as when it has passed through the potter's hands and has been converted into china and earthenware. It is a universal law that governs matter.[1]

"If we can show that the land heretofore appropriated is not only not worth as much labor as it has cost to produce it in its present condition, but that *it could not be reproduced by the labor that its present value would purchase*, it would be obvious to the reader that its whole value is due to that which has been applied to its improvement."[2] Again, "There is not, throughout the United States, a county, township, town, or city, that would sell for cost; or one whose rents are equal to the interest upon the labor and capital expended."[3] Quotations and arguments from his works might extend over pages, — all to the effect that capital in land differs in no respect from that invested in machines. In fact, President Walker remarks that, "The trouble with Mr. Carey's argument is its superabundance of proof."[4] In other words, before appropriation, land is a free good, like air and water. Its value is due to the labor employed in its appropriation and improvement.[5] "Improvements" is broad enough to include roads, canals, churches, and the like.[6] Land being capital, rent is only a form of interest. As progress, invention, and skill advance, the cost of reproduction declines. Therefore rents proportion-

[1] Principles of Social Science, vol. i, p. 164.

[2] Principles of Political Economy, vol. i, p. 102.

[3] Past, Present, and Future, p. 60; almost the same wording in Principles of Social Science, vol. i, p. 168.

[4] Land and its Rent, p. 77.

[5] Principles of Political Economy, vol. i, pp. 129, 130.

[6] Principles of Social Science, vol. i, p. 168.

ately decline; proportionately, of course, to the products of the land.[1]

Second. The natural order of cultivation is from poor to rich soils, from the dry, sandy soil of the hillside to the rich lands of the valley. Since this argument is aimed at Ricardo, we will give it as follows: (1) Inconsistencies of Ricardo, (2) Why Ricardian rent is generally accepted, (3) It depends on a single supposition, (4) Statement of Carey's argument, (5) Deduction: rent proportionately declines.

After an introduction replete with irony as to Ricardo's "great discovery," he turns to the college professors and compares them to the followers of Mohamet in regard to the Koran. Their insolvable task is to determine what it is they are required to believe. Those who follow Ricardo are economists *par excellence*, anything short of absolute faith in him is heresy, worthy of excommunication, contemptible. The professor "having studied carefully the works of the most eminent of the recent writers on the subject, and having found no two of them to agree, he turns, in despair, to Ricardo himself, and there he finds, in the celebrated chapter on rent, contradictions that cannot be reconciled, and a series of complications such as never before, as we believe, was found in the same number of lines. The more he studies, the more

[1] Doubtless J. S. Mill and F. A. Walker are the strongest, at least among the strongest, critics of Carey's cost of reproduction concept. Mill omits cost of reproduction in his criticism of the point. Take this from his argument and Carey himself would not recognise it. J. S. Mill, Principles of Political Economy (Ashley ed., London and New York, 1909), pp. 430–432. See Macleod, The History of Economics, London [1896], pp. 590–592 on self contradiction of Mill on rent. Walker makes the stronger criticism (Land and its Rent, pp. 75–88). In a later work this author advocates cost of reproduction. He speaks of it as "beyond the reach of discussion." (International Bimetallism, N. Y., 1897, pp. 25–29.) Professor J. W. Jenks expressed the opinion that Carey's theory of a constant decline in value, including agricultural products, is that he had in his mind's eye the United States where, due to free and abundant fertile lands, agricultural produce had still a low cost of production. (Jenks, Henry C. Carey als Nationalökonom, Jena, Fisher, 1885, pp. 30, 31.)

he is puzzled, and the less difficulty does he find in accounting for the variety of doctrines taught by men who profess to belong to the same school, and who all agree, if in little else, in regarding the new theory of rent as the great discovery of the age." [1]

Why Ricardo's Theory is generally accepted. "At first sight, it looks, however, to be exceedingly simple. Rent is said to be paid for land of the first quality, yielding one hundred quarters in return to a given quantity of labor, when it becomes necessary, with the increase of population, to cultivate land of the second quality, capable of yielding but ninety quarters in return to the same quantity of labor; and the amount of rent then paid for No. 1 is equal to the difference between their respective products. No proposition could be calculated to command more universal assent. Every man who hears it sees around him land that pays rent. He sees that that which yields forty bushels to the acre pays more rent than that which yields but thirty, and that the difference is nearly equal to the difference of product. He becomes at once a disciple of Mr. Ricardo, admitting that the reason prices are paid for the use of land is that soils are different in their qualities, when he would, at the same moment, regard it as in the highest degree absurd if any one were to undertake to prove that prices are paid for oxen because one ox is heavier than another; that rents are paid for houses because some will accommodate twenty persons and others only ten; or that all ships command freights because some ships differ from others in their capacity." [2]

Ricardo's whole theory is based upon a single supposition. After reducing the theory to six brief state-

[1] Past, Present, and Future, pp. 17–18 (quotation from p. 18).

[2] Ibid., pp. 18, 19.

ments, he (Carey) says, "It will be perceived that the whole system is based upon the assertion of the existence of a single fact, *viz.*, that in the commencement of cultivation, when population is small, and land consequently abundant, the soils capable of yielding the largest return to any given quantity of labor alone are cultivated. That fact exists or it does not. If it has no existence, the system falls to the ground. That it does not exist; that it never has existed in any country whatsoever; and that it is contrary to the nature of things that it should have existed, or can exist, we propose now to show." [1]

So much for Ricardo's single supposition and what Carey proposes to show. What is Carey's argument on the point? He reverses the Ricardian order of cultivation. In the first settlement of a new country Ricardo thinks that No. 1, the 40 bushels to the acre tract, would be first occupied. When population multiplies to the extent that it is necessary to cultivate No. 2, then rent begins on No. 1 — the rent being the difference between the two or 10; and so on.

In the first settlement of a new country Carey thinks that the poorest tract, say No. 5, will first be occupied, and with the growth of population and wealth 4, 3, 2, and 1 will successively come into cultivation. Carey's reasons are that the richer lands offer greater resistance than half-civilized men, or needy colonists, or the few new settlers in a virgin land with small capital and no organization, can overcome. The most fertile lands are covered with dense forests, among the most general difficulties are swamps or marshes, bogs and malaria. Through the growth of population, capital, and association such power over nature is acquired as will make possible the utilization of the most fertile soils.[2]

[1] Past, Present, and Future, p. 23.

[2] Ibid., chap. 1; also Principles of Social Science, vol. 1, chaps 4, 5.

From this it follows that constantly increasing returns result, and "there is a steady diminution in the proportion of the population required for producing the means of subsistence, and as steadily an increase in the proportion that may apply themselves to producing the other comforts, conveniences, and luxuries of life." [1]

Continuing, we find that, "Rent is paid for the improvements which labor has accomplished for, or on, land, and which constitute items of wealth. Wealth tends to augment with population, and the power of accumulating further wealth increases with constantly accelerating pace as new soils are brought into cultivation, each yielding in succession a larger return to labor. Rent tends, therefore, to increase in amount with the growth of wealth and population," [2] etc. But while there is an increase in the amount of rent, it must be remembered that rent, or the price charged for the use of land, like prices of all commodities and things, is but compensation for the results of past labor. As cost of production becomes less, prices are lowered. Therefore, tho total rents increase, rent as a share of the produce of land decreases proportionately.[3]

So much for Carey's arguments on rent and the relation of rent to kindred problems. I shall conclude with a comparison of these writers, hoping thereby that Carey's attitude toward Ricardo may be better understood.

Ricardo lived in pessimistic England at the close of the Second Hundred Years' War with France;

[1] Past, Present, and Future, p. 25.

[2] Ibid., p. 62.

[3] Principles of Social Science, vol. i, p. 164.

Carey lived in optimistic America during her golden age of prosperity after 1837. The first wrote in the England of 1817; the second wrote in the America of 1848. Ricardo was pessimistic — things would have been better if they had not been so bad; Carey was optimistic — things will be better because nature is so good. The first accounted for misery through the niggardliness of nature; the second accounted for misery through the fault of man. Ricardo was a free-trader; Carey was a protectionist. The Malthusian law of population and the Ricardian theory of rent rest on one and the same hypothesis; the limited supply and diminishing productiveness of land in its relation to human fecundity with undiminishing power. Carey's doctrine of population and theory of rent are based on the principle of an increasing supply of land in its relation to human fecundity, — that fecundity diminishing with the development of man. With Ricardo, labor accounts for the value of most man-made goods; with Carey, labor accounts for the value of land and other goods. Ricardo's order of cultivation was from rich land to poor; Carey's order of cultivation was from poor land to rich. Ricardo's rent concept is static; tho he taught historical diminishing returns, his formula can serve only for measuring static or unalterable conditions. Carey's rent concept is dynamic, he looks upon society as progressive, multiplying in inventions and skill and increasing its returns as it grows. Ricardo regarded land as a distinct factor of production; Carey regarded land as capital. With Ricardo, rent is a differential surplus above a no-rent margin; with Carey, rent is interest on capital in the form of land. The first thought that improvements caused a decrease in total rent; the second thought that improvements caused

an increase in total rent. Ricardo taught that rent increased while labor received less and less on a declining margin; Carey taught that rent proportionately declined while labor received proportionately more and more on a rising margin. To one increased numbers meant diminishing returns and rising rents at the expense of profits and wages; to the other increased numbers meant increasing returns and rising wages at the expense of rents and profits. Both were successful business men. Neither was a college man. Either ranked as the strongest contemporary economist of his nation. After all, the fundamental, the one point between Carey and Ricardo, in this connection, is diminishing returns. It is true that Carey said "no" when Ricardo said "yes"; Carey considered his doctrine the direct opposite of that taught by Ricardo. Differences in the order of cultivation present no fundamental distinction in this question. The philosophy of Ricardian rent refers to lands under cultivation at the same time. Recent studies justify Carey's contention in many instances as to the historic order of cultivation. Grant the point, yet Ricardo's law of rent is untouched. Not historic orders, but lands under cultivation at the same time present the basis for a differential rent doctrine.

That Carey said "no" when Ricardo said "yes" is taken by critics to be the backward and forward looking faces of the same proposition. This, however, is but another instance of the common fallacy of mistaking different things for the same thing. This I will show through a consideration of the essence of the whole controversy — diminishing returns.

Since Carey was not specific on the point, he leaves us to interpret his fundamental, possibly his subconscious philosophy of this question. In my judg-

ment there are three, and only three, possible interpretations :—

1. There is a declining demand for commodities as society approaches a more perfect association, and meanwhile there are increasing returns from land. In other words, while the supply of commodities is constantly increasing, our needs are constantly decreasing.

2. Another interpretation — and that the general one — is that Carey denied outright the law of diminishing returns as Ricardo used it.

3. Carey passed by diminishing returns in agriculture and reasoned with a land-supply concept in mind.

Regarding the first of these, Carey, after arguing for a tendency to substitute vegetable for animal foods, and for increasing powers of augmenting supplies of necessities as man approaches a more perfect state of association, said, "The better his clothing, the less is the waste of his body, and the less his need for food." [1] Further,[2] "Look, therefore, where we may, we find, throughout nature, a constant tendency towards the perfect adaptation of the earth to the wants of a growing population — each and every increase in the power of association and combination being accompanied by diminution in the quantity of raw material required for the maintenance of human life, and increase in that which may be obtained in return to any given amount of labor." [3]

Few men have been criticized more severely than Carey, yet none have been so cruel as to accuse him of being serious on this point. This does not enter in as a part of the body and substance of his philosophy.

[1] Principles of Social Science, vol. iii, p. 318.

[2] Ibid., vol. iii, p. 319. Also ibid., chaps. 46, 47, bear on the point.

[3] Mr. Carey should have remembered that clothing and general comforts make a demand on the land as much as food does.

It must be considered alone — isolated from the body it is presumed to serve — it is a kind of philosophical comet blazing up for the moment, contrary alike to law, order, and common sense. Why did Carey compel the farmers to move to more fertile soil, if the soil they were on was constantly increasing its returns and the needs were constantly diminishing? The fact is that Carey, at this point of the discussion, has in mind a primitive economy.[1] This is no ultimate doctrine. That animals, well housed and protected from freezing weather, rains, and snow, require a less amount of food to preserve them in the same state of health and vigor is beyond discussion. That warm clothing, sanitation, and comfortable housing for people mean a less waste of body, and a somewhat less absolute need for food, is a matter of common knowledge. But at this point the analogy between men and beasts breaks. What the desires of horses and cattle were a thousand years ago, they are today. Man's desires, however, are progressive, they mount with every additional opportunity for gratification. Desires are the motive force of economic activity, and it follows that dynamic progression — the centre of Carey's philosophy — is based upon desires for more and better goods. To accuse him, then, of advocating the point beyond a primitive economy, or at least beyond the point where man has secured conveniences to conserve his animal heat, is to accuse him of contradiction so serious as to wreck his whole philosophy.

Upon the second possible interpretation much less is to be said. Ricardo limited land, labor, and capital to definite units and gave them a mathematical expression. Not to limit the land factor is, I submit,

[1] I take it that needs vary in relation to the standard of living: in a primitive economy needs are absolute essentials; in an advanced economy they correspond to the character of desires.

to dodge or pass over the diminishing returns issue in the Ricardian sense. This Carey did. There is not a sentence in his hundreds of pages on rent and population which claims that constant expenditures on a limited specific area bring an ever increasing return. His was a different theme, — from poor land to fertile, which I shall term a land-supply concept. His reasoning was upon an entirely different basis. He did not preach increasing returns on a limited area of land.[1] If a farm on the hill-side showed constantly increasing returns, it would soon be more productive than the low lands. If the farmer's first expenditure, or first dose, on the limited area yields 10, his second 12, his third 15, on up to 100 and beyond, what possible excuse could he have for moving to the low lands? There is no evidence that Carey regarded the process of moving as a particular source of large fortunes.

While Ricardo based diminishing returns upon historic conditions, his formula or his mathematical expression of it was static, and could serve only as a measure of static conditions. He assumed conditions in a given state of advancement. At the same time he recognized the Malthusian tendency of population to outstrip the means of subsistence. Thus he yoked a static with a dynamic concept. Consequently he over-emphasized the principle of resistance in agricultural industry, to the neglect of inventions in the industry as a whole. His prophecies as to resulting conditions were, consequently, extremely pessimistic. They have been falsified both in England and America.

[1] Sherwood, S., Tendencies in American Economic Thought. (Johns Hopkins University Press. Fifteenth Series, XII.) — Professor Sherwood argues to the effect that Carey did deny Ricardian diminishing returns, and, so far as I know, gives the best available argument for that contention. Professor Sherwood makes no distinction between diminishing returns on a limited area under static conditions and diminishing returns relative to the whole industry over a long period of time. (Pp. 20–23.) My contention is that the two are essentially different.

It was this that raised the ire of optimistic Carey. The conclusion is that the first two of these possible interpretations were not entertained by Carey. He never thought that as civilization took a higher form and became more complex our needs and demands for goods would diminish. Neither did he believe that the application of more and more units of labor and capital on a limited area would show constantly increasing returns.

Yet he preached increasing returns. This brings us to the third, and to what I believe to be the correct, interpretation of his idea of returns from land. It must not be forgotten that his thought was dynamic, his environment was one of growth and change, and in conformity his economy was dynamic. To him land was not a fixed factor in production as it was with Ricardo. The limited area concept was absent from his reasoning. Diminishing returns to him were quite different from a mere denial of diminishing returns in the static sense that Ricardo conceived it. The problem to him was a dynamic one, over a long period of time. He conceived returns in the light of growing skill, and of industrial and technical developments, that multiply with the growth of capital and population. Increasing power resulted in the better utilization of land, in the harnessing of new lands, in the substitution of richer, better lands for old lands.

Growing power to increase the land-supply or real productive power of the earth was, I submit, the central idea in Carey's reasoning on returns. This was no denial of Ricardian diminishing returns. Their problems were entirely different — static and dynamic returns are different species.

Carey's writings are on the border line, if indeed they do not suggest what I believe to be a truer state-

ment of proportionality than has been given. Recent thought, however, seems to owe more to Hobson,[1] Clark,[2] and Cannan[3] because of their extension of the application of the rent doctrine, than to older writings on the subject. To avoid reading trains of thought into Carey which belong more to recent writers, I shall assume full responsibility for the following remarks, which, it is hoped, will present a truer statement of the difference between Ricardo and Carey.

Land, like labor, money, or tools, is a productive factor. The supply of productive factors is measured by their yield and not by their bulk. The number of laborers does not tell us the supply or productive power of labor. We must know of their skill, strength, and organization. The number of dollars does not tell us the supply of money, the value and rate of turnover of these dollars must be known. With the land-supply the case is not different. The land-supply is the available force or power to do the land work. The land-supply consists of available or effective utilities and not of potential utilities which may be harnessed in the future, or when new conditions arise. Location, fertility, and intensity of cultivation must be considered, as well as area, when reasoning on the land-supply.

Any productive agent is economically non-existent until its potential utilities become effective utilities.[4]

[1] Hobson, J. A., The Law of the Three Rents, Quarterly Journal of Economics, 1891, vol. v, pp. 263–288.

[2] Clark, J. B., Distribution as Determined by a Law of Rent, Quarterly Journal of Economics, 1891, vol. v, pp. 289–318; A Universal Law of Economic Variation, Quarterly Journal of Economics, 1894, vol. viii, pp. 261 ff.

[3] Cannan, E., Origin of the Law of Diminishing Returns, 1813–15, Economic Journal, 1892, vol. ii, pp. 53–69.

[4] Veblen, T., On the Nature of Capital, Quarterly Journal of Economics, August, 1908, p. 523. Commons, J. R., says, "The gifts of nature become capital as soon as

Gold at the bottom of the sea is economically non-existent because it has only potential utility. Gold in a national bank is economically existent; it has effective utility. The effective utility of land is the supply of land; the swamp lands, in the Carey use, — all lands, under given industrial conditions, which are beyond man's control, which in no way contribute or can be made to contribute to his needs, — are economically non-existent. They are no part of the economic supply of land. No one claims that fur-bearing animals in the wilds of Siberia, beyond the reach of man, compose a part of the supply of furs. Yet their name is legion who affirm that the supply of land is fixed, thus including lands impossible of utilization under existing circumstances. The greatest enemy of some of their ideas is other of their ideas. Canals, like the Panama, that will make possible the drainage and cultivation of lands whose utility previously had not been dreamed of; railroads extending quick, cheap transportation into the interior, thus converting waste lands into corn and wheat fields; extensive systems of irrigation that banish nature's lottery of seasons and rains — these are increasing the effective utilities, the land-supply, extensively. Sub-soil plowing, — working down into the earth, building upon the soil, any means of more intensive cultivation, — any means of compelling a limited area to contribute more to the needs of man than before, is to convert potential into effective utilities — to increase the economic land-supply. This does not say that potential utilities are without influence on supply, — let the demand become stronger and force is applied to the harnessing of potential utilities. It

they are utilized by man. Before they are utilized they have no economic significance, and are, therefore, neither capital nor land, in the economic use of those terms." The Distribution of Wealth, pp. 137–138.

does mean to say that potential utilities are not a part of the supply. Not to distinguish between "amount of land" and land-supply is a source of confusion.[1] More intensive and more extensive utilization result precisely in the same thing, — more effective utilities, a greater land-supply. For the economist to reason on the acre basis rather than on an effective utility basis is to shift from an economic to a physical point of view. An acre of land is an acre of land, be it on the top of Mt. McKinley or on Wall Street. What of their productivity, their value, their capitalization? These are economic questions. The acre is a mere measure, an area test, of a physical entity, — that is all.

In old or new lands, potential utilities resist being harnessed; some such utilities are further than others below the margin of utilization. This is a matter of degree, not of kind. Whether extensive or intensive, such utilities resist being harnessed. This may be termed "the principle of resistance." This brings us to a further conclusion of great significance, heretofore unnoticed, namely, that it is impossible to tie down any one agent in our reasoning on proportionality and to treat it as a limited, or definitely fixed, factor. These truths, differentiation between effective and potential utilities in determining supply and the principle of resistance, are applicable to all productive agents. They are illustrated by the discussions on the quantity theory of money. Their essence is embodied in such expressions as "The nimble sixpence does the work of the slow shilling."[2] "The money force, or supply of money, is . . . composed of two factors, — the amount of money and the rapidity

[1] Fetter, F. A., The Principles of Economics (2d ed.), N. Y., 1910, pp. 155–158.

[2] Walker, F. A., Political Economy (Adv. Course, 3d ed.), N. Y., 1888, p. 131.

of circulation." [1] Resistance is here implied, of course, else one coin would be a national supply. The reasoning applies to horse, laborer, machine, and all productive agents, in the same way and for the same reasons that it applies to land and money.

Realizing that a product is, under complex industry, a resultant of numerous indirect agents,[2] and that all indirect agents are alike subject to the "principle of resistance," it follows that "diminishing returns" is simply a law of proportionality, with no fixed factors, and that all factors are adjusted, or the attempt is to adjust them so that the maximum efficiency of production will result. Such adjustment, equilibrium, or proportionality is an industrial ideal, and all efforts to attain it are, and must be, based upon the general principle of resistance.

In America, where land was so rich and abundant, economic advancement was striving toward that economic goal — a proportionality of factors. In a new country every step approaching that proportionality is attended with larger returns than the preceding step. Such environment produces subtle and inexplicable forces that bend action and force thought into new channels. "American economists from the time of Carey have naturally thought of change and progress as normal, and have protested against the assumption of fixity of customs, in social institutions, in the land-supply, in the labor force, and in the industrial processes." [3] Now that the supply of productive agents is elastic, and that resistance must be overcome in securing more effective utilities from these agents,

[1] Walker, F. A., Political Economy (Adv. Course, 3d ed.), N. Y., 1888, p. 131.

[2] See example of the day laborer's coat. Adam Smith, op. cit., vol. i, p. 13.

[3] Fetter, F. A., Publications of the American Economic Association (3d series, vol. xi, No. 1), p. 135.

and that a product is the resultant of numerous indirect agents, it follows that the proper proportioning of these agents must be based on the principle of resistance or diminishing returns.

The entrepreneur's problem is largely one of proportionality. He must so apportion productive factors as to secure the best adjustment of means and ends. He must meet the demands of the market. This is a problem of change and progress, of living force and movement; therefore the dynamical problem of *substitution* is ever confronting him. There is the double problem in proportionality of apportioning the productive factors and of apportioning the whole establishment to the extent of the market. This, should we take the space to argue it, would lead to the conclusion that when the point of greatest net return is reached more money would not be invested in the plant. The securing and maintaining proportionality is inseparably connected with the principle of *substitution*. In fact substitution is the means to that end. Now that diminishing returns is common to all productive agents, the proper apportioning of these factors in productive enterprise must be based on this general principle of resistance; therefore the principle of substitution must work in conformity with diminishing returns.[1]

In the coöperation of productive factors the ideal is to secure such an adjustment as will yield the greatest net return. More of a single factor than the ideal proportion demands is unnecessary cost. Less of a single factor than a proper apportionment demands indicates unnecessary cost on the part of the other factors in the coöperation. Disproportionality means

[1] See Marshall on the relationship of the principle of substitution to diminishing returns. Principles, pp. 355–356, 435.

diminishing returns, substitutions or readjustments that bring about or approach true proportionality will augment returns. Whether long factors will be substituted for short, or the reverse, is a question partly of anticipated value return and partly of the comparative productive monopoly held by particular factors. For the above reasons long factors will not be increased. This would disobey the law of demand which tends to equalize marginal utilities, and would be unwise investment. In a productive establishment land, labor, and capital are coördinated and each employs the others, so to say. Also various competing uses are demanding each of these factors. A short factor cannot bid strongly enough to cause an increase of factors which are already too strong in the same establishment. If it could, it must be stronger than any competing use, but this would involve the absurdity that all competing uses are subject to still greater diminishing returns than itself. In a purely agricultural society where land, labor, and capital are devoted almost exclusively to agriculture, the range of substitution is comparatively limited. Alternate demands are few. Land in a particular location gradually becomes the short factor as labor and capital are increased. The demand for adjustment increases with the growth of disproportionality. Substitution must be made, but in the very nature of the case the long factors — labor and capital — cannot be adjusted to the short factor — land. Land must be adjusted to the other two. It is very evident that substitution is made because of diminishing returns on a limited area. Should we assume long factors to be adjusted to a short factor, it is still true that the purpose and act of substitution is based on diminishing returns. Movement from poor land to rich is substitution

based on the land-supply concept. Such substitution confirms diminishing returns on a limited area.[1]

We conclude that the supply of the productive powers of factors or their effective utilities is elastic, that resistance must be overcome in the conversion of potential into effective utilities, and that the problem of disproportionality arises out of differences in the degree of resistance to be overcome in apportioning factors, or in increasing the supply of short factors. Substitution by avoiding greatest resistance seeks the easiest means of increasing supply. To advocate the law of substitution in production, except in cases of indifference, is logically to affirm diminishing returns. The substitution of new lands for old, or the use of new lands rather than a more intensive utilization of old lands, as population and capital grow, is based on the law of diminishing returns.

To attain superior adjustment of means and ends is, consciously or subconsciously, the ambition of all business concerns. It is the aim of all economies. This being true, the very fact that land was the short factor in the England of 1817 and the long factor in the America of 1848, helps us to account for these different economies.

With the law of substitution in mind, of which Carey made so much, I hope we are ready to state the difference between Ricardo and Carey on returns. In conformity with English conditions and with the thought of Malthus and especially Sir Edward West, we find that Ricardo's concept of diminishing returns,

[1] In fact this law of substitution simply pervades Carey's whole economy. Power over nature grows with the substitution of improved instrumentalities; from the use of the pack-saddle to the railroad car; from the canoe to the steamer; from the poorer to the richer soils; from animal to vegetable products; from the vegetable to the mineral kingdom, — at every stage substituting the cheap and abundant for the costly and scarce, thus progress is exhibited in the steady advancement from savagism up to the highest attained civilisation. (See Dr. William Elder, A Memoir of Henry C. Carey, Philadelphia, 1880, p. 9.) These are of his most common expressions.

his statement of it, and his mathematical expression of it, were static, and were confined to a limited area.

In conformity with rapidly changing conditions in the United States, and with his own way of thinking, Carey's concept of returns was dynamic. He thought of returns over a long period of time and without limit as to area. Taking this view of the question only false reasoning could lead him to any other conclusion than that returns from land would increase with the growth of skill and science, of population and wealth.

Static diminishing returns and dynamic increasing returns have little or nothing in common. They are different species. To affirm the one is in no sense to deny the other.[1]

We are brought to the interesting question, Did Carey deny Ricardo's concept? We might answer that he had nothing to say on a static concept of returns relative to a limited area. Seemingly he misunderstood what it was that Ricardo taught. In the absence of a specific statement, however, his teaching, as we believe, would rather confirm than deny the Ricardian concept. If not, why did he think that population would become too dense? This was his opinion in 1848 before he had found a check to over-population. Why did he look for the relief of over-population in the harnessing of new lands? Above all, the law of substitution was a salient feature of his economy. This law was so prominent that Dr. Elder spoke of it as a leading feature of Carey's writings.

In Ricardian usage land, labor, and capital were the productive factors. The essence of the problem confronting Ricardo was the disproportionality of these factors. Land ("being fixed") grew proportionately shorter with the increase of labor and capital. This

[1] Marshall, op. cit., p. 165.

is to say, it showed diminishing returns. Of course returns are reckoned relative to the whole investment, tho in Ricardo's mind land was the particular source of increasing costs.

Also the problem confronting Carey was one of disproportionality. Briefly, what were his views? Population first settles on the poor land. Capital and labor increase until land becomes the short factor. Meanwhile increased strength enables them to appropriate a more fertile tract. After a time this becomes the short factor and so on until the most fertile tract is reached. Every movement is based on the principle of diminishing returns.

We conclude that the views of these two famous economists were not opposite views of the same thing. Their economics were upon different bases; two different economics from two different premises of fact and viewpoint; the one was an outgrowth of industrial and social conditions in the England of 1817; the other was an outgrowth of industrial and social conditions in the America of 1848.[1] Ricardo's diminishing returns and Carey's land-supply concept are both essential to a true law of diminishing returns.

The reason for the common opinion that Carey denied diminishing returns in the Ricardian sense is, I believe, that critics have made the common shift from static conditions on a limited, specific area to dynamic conditions covering the whole industry over a long period of time. Taking the latter, which is an entirely different problem, Carey was right. Looking either backward or forward, to the past or to the future, the whole industry, in the historical sense, shows increasing returns. Other reasons are that only effective utilities compose the land-supply or the supply

[1] Gide and Rist, Histoire des Doctrines Économiques, Paris, 1909, pp. 388–389.

of any factor. These compose the force, the available power to perform the functions of productive factors. Proportionality is worked out upon this principle, but in all adjustments tending toward proportionality, the law of substitution is assumed; it is the means to that end. This law, in turn, is generally based on diminishing returns. Therefore, having shown at length, that Carey's contention was for substitution for the short factor, — land, we have shown that, in reality, he confirms diminishing returns, tho he nowhere specifically mentions that law in the sense that Ricardo used it.

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THE RELATION BETWEEN KINDS OF STATISTICAL UNITS AND THE QUALITY OF STATISTICAL MATERIAL

SUMMARY

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THE name statistics denotes both a method, or methods, of utilizing a certain class of facts for scientific or practical purposes, and also the facts or materials of knowledge that may be so utilized. It is with the

materials accessible to exploitation by statistical methods that this paper deals. These materials are superficially distinguished as being numerical. Is it to be inferred that all numbers are statistics? Or, to put the same question in a different way, are they all statistical material of equal grade?

Statistics combines units into aggregates and recombines aggregates into totals. For comparison, the aggregates are then analyzed and condensed into significant averages and ratios. The quality of the product of these processes depends upon the adequacy of methods employed and upon the quality of the raw material. The quality of the material is conditioned by the character of the unit and by the completeness and correctness of the combination of the units into aggregates. In other words, the quality of statistical material varies with the adequacy of the count and with the character of the unit counted.

As regards the comparative importance of accuracy in enumeration and compilation on the one hand and of the character of the unit dealt with, on the other, it is sufficient here to affirm the equal importance of the latter and let the following pages be the evidence. So far as accuracy means exactness as distinguished from mere representativeness (if it might be assumed that we could have the second without a good deal of attention to the first) the superior importance of the character of the statistical unit, tho so little noticed, should be evident to those having acquaintance with the actual processes of statistical cumulation.

The uses to which numerical data may be put depend upon the kind of unit more fundamentally than upon anything else. The quality of a product is always conditioned or limited by its ingredients. It is, of course, fundamental to know what the unit

employed means, that is, its denotation and connotation must be clear. But when all requirements of definition and conception are met, the unit may still be good or bad, and consequently, the numbers obtained more or less amenable to statistical use. It is an incident of this distinction that some divisions of statistics, in their existing state, must be given lower scientific rank than others.

The scheme of classifying statistical units here proposed is as follows: —

A. Individual things the quantity of which is determined by counting.

1. Natural kinds and events relating to natural kinds.
2. Produced kinds and produced qualities of things.

B. Mensurational units which are applied to determine quantity without regard to individuality.

3. Physical measures (of length, capacity, etc.).
4. Measures of pecuniary value.

These classes of units are arranged in the descending order of their statistical quality. In this order we shall discuss them.

The Natural Kind

The conception of a distinction of kinds as developed by J. S. Mill in his *Logic* (book I, chap. vii, § 4) is as follows: —

> There are some classes, the things contained in which differ from other things only in certain particulars which may be numbered, while others differ in more than can be numbered, more even than we need ever expect to know. Some classes have little or nothing in common to characterize them by, except precisely what is connoted by the name: white things, for example, are not distinguished

by any common properties except whiteness; or if they are, it is only by such as are in some way dependent on, or connected with, whiteness. But a hundred generations have not exhausted the common properties of animals or of plants, of sulphur or of phosphorus. . . . If any one even chooses to say that the one classification is made by nature, the other by us for our convenience, he will be right; provided he means no more than this: Where a certain apparent difference between things (tho perhaps in itself of little moment) answers to we know not what number of other differences, pervading not only their known properties, but properties yet undiscovered, it is not optional but imperative to recognize this difference as the foundation of a specific distinction.

Demography, or population statistics, has for its principal unit the human individual, and human individuals constitute a natural kind. Other examples of natural kinds in statistics are the various raw products of the animal and vegetable world, the numbers of which are usually obtained by counting discrete units.

It is evident that where the statistical unit is a natural kind it is superior in respect of both definiteness and fulness of meaning to any that requires an artificial distinction, however well thought out. It follows that, other things equal, the highest grade of statistics is composed of numbers relating to natural kinds. Tho the best examples are the orders, species, etc., of animals and plants, any natural and therefore more or less genealogical method of distinguishing objects would give classes of the same character. "Sticks and stones," as well as animals and plants, might be divided into natural kinds, tho probably differences of behavior are so helpful in classification that unmanufactured inanimate objects would not so readily lend themselves to the differentiation of kinds as do living things. But a genealogy of atoms and molecules and even of their associations and mixtures is conceivable; and it could not fail to show natural differences of kind.

Natural classification is the opposite of mathematical. A mathematical classification might be arrived at by a development of the permutations and combinations of specified qualities which would make of each combination a species. In a natural classification, definition does not depend on a single point but oftener upon a combination of characters, some of which may be absent. To classify plants merely according to the number of pistils and stamens is in this sense "mathematical." Defining by reference to a single point and hinging classification on such definition is a thing to guard against. Distinctiveness, in the sense of recognizability, is not to be attained that way, any more than is a workable classification. Statisticians sometimes fail to distinguish between clearness of discrimination — which is best tested by promptness of recognition — and sharpness of definition.

A very great advantage of the natural kind as a unit consists in its ordinarily being recognizable without the aid of definition. It is not necessary for the enumerator to exercise great discrimination in determining whether an animal is a horse or a cow. This is not the same as saying that there will be no doubtful cases in the discrimination of natural kinds, cases where the use of carefully devised definition must be resorted to. But the discrimination of the natural kind does not ordinarily depend upon them, while in the case of an arbitrary or "mathematical" classification it is likely to.

Statistics relating to sex and race deal with differences of kind. This fact adds greatly to the significance of the results of a count, even where, as in the case of races, mixtures are of frequent occurrence and definition, therefore, not easy. The different species of domestic animals are also natural kinds. Ox-hides

are, consequently, a natural kind, but shoes are not. A census of farm animals gives reliable results strictly in proportion to the care with which the enumeration is made, while a census of occupations or of manufacturing establishments may give somewhat uncertain and disputed results despite the greatest care and conscientiousness.

Variation in the size of units may be urged as an objection to the adequacy of counting as a means of determining quantity. In the case of a natural kind such variation is easily disposed of. It is ordinarily quite regularly distributed about a mean. If it be desirable to gage the character and range of such variation, the problem is one with which the statistical method is especially competent to deal. This is the nature of most statistical biology.

Variations in size may be studied as a means to the further and fuller characterization of the kind. Counting by size classes and sub-classes may be a sufficient substitute for detailed measures. Coefficients of variation for such variations as are of fairly constant character may thus be determined. When the variation, both quantitative and qualitative, about the mean is found to be very nearly constant, once these coefficients are determined, totals may convey all the information that it is necessary to obtain by actual count, the rest being easily estimated. It would seldom be necessary to specify the quantity of the sizes of grains in a bushel of wheat, or of fish in a catch, or of range cattle in a herd.

Natural kinds may undergo secular or evolutionary change. Cattle have increased greatly in weight in the past few centuries. This is an important statistical element which might seriously affect a comparison. But the presence of such a change is easily ascertained.

To make proper allowance for its influence is not difficult. Secular change in the character of the statistical unit is one of the least troublesome phases of definiteness.

Counting is the usual method of obtaining statistics of natural kinds. Measuring, tho sometimes a practical convenience, is never a logical necessity. Counting will tell more than mere measuring.

Differences in the degree of some quality of a natural kind partake of the statistical character of the unit to which they pertain. Age is an example. That it is measured in terms of astronomical periods is logically an accident. Ages represent differences in the degree or stage of development of a group of natural qualities, called, according to the varying stages, youth, maturity, senility, etc.

Births and deaths are events relating to natural kinds and they have a corresponding statistical standing. Thus vital statistics in general have a unit of the first order. But the status of a marriage is somewhat different. At least as legally defined, it is as much artificial as natural.

To summarize the conclusions drawn from the foregoing: Statistics of natural kinds are superior to such as are based upon some other sort of unit, both negatively and positively. Misunderstandings of the informant, of the enumerator, and of the compiler should be at a minimum in the case of such a unit. Instruction in niceties of definition is seldom necessary. And this ready recognizability is no accident; it results from the nature of things. Positively, also, such statistics have fuller meaning and may at any time develop an unexpected significance. A division into natural kinds is more concrete than one requiring abstract definition. Relations with other objects are

clearest where the terms are ordinarily concrete or discrete kinds. Much may be made of statistics of natural kinds even where there has been no careful attention to classification.

Products as Statistical Units

In calling the second order of statistical units "produced" objects we bring in the idea of economic production. Economic goods are the result of modifications of natural materials for human uses and purposes. The materials may still have the properties of natural kinds. But the statistics of such things will relate primarily to the distinctly produced qualities. Classes of these are not fixed and objectively definite. The purpose and function of the same article may vary, and physically different goods may, on the other hand, be made to serve the same purpose. A door is not a door when it has been converted into a table top. But it is not so easy to say when a street car ceases by reason of decrepitude to be a car. Corn is not fodder when it becomes fuel. If a chair is something to sit in, what is a stepladder chair? Personal idiosyncrasy as well as human reason may be a factor in such classifications.

The foregoing illustrations suggest the fundamental difference between units of the first order and those of the second order. Among the latter, definition and classification hinge mainly upon function. Natural kinds are defined otherwise. It is significant that the biologist finds functional characters of little or no use for the purpose of classification.

Manufactured commodities and instruments and the produced qualities of natural and other objects comprehend virtually the whole of the second order

of units. The drawing of the line between such objects and natural kinds is not always so easy as might appear, but that need not detain us.

With this sort of unit difficulties of definition do not, as with natural kinds, amount to less in practice than in theory. An important group of such difficulties consists of those resulting from a compound purpose — the case of a tool that will do several things equally well, or a wage-earner who has two occupations. Difficulties of definition are familiar in relation to numbers employed by a particular concern or in a particular occupation. Complications due to time lost, part-time employees, and subsidiary occupations, are ghosts that refuse to be laid. Apparatus in use or available will be returned variously until the use and the degree of need of reserves for repairs and emergencies becomes more nearly determinate. It is not an accident that these examples, tho there was no such intention, come from industrial statistics. Here much more depends upon good classification, or rather upon careful attention to classification and definition, than is the case in dealing with natural kinds.

Freight and passenger cars of the railways are characteristic made kinds, with a good deal of recognizability, but sometimes also occasioning much perplexity in border cases. How shall cabooses, how combination express and mail cars be classified? One street railway has been known to return the little-used private car of its president as a freight car. Difficulties are sure to arise where classification depends ultimately upon purpose, even tho incidental details of physical construction ordinarily help — perhaps in the end only to increase the doubts and difficulties when they do arise. It is the purpose of the maker and of the user

not the observer's notion of what is suitable, that is referred to, hence the criterion is comparatively objective. To define by the purpose of the maker is one way to make the required definitions clear and easily applied. This should be done, even at the cost of some degree of arbitrariness.

Produced qualities as well as produced objects have the characteristics of this second sort of unit. Social status in general, for example conjugal condition, probably belongs here. Occupations, and with them statistics of wages, clearly belong here. Wages really describe a produced quality of the person in the occupation, or the degree of such a quality. Hence wage statistics are not to be classed under the value unit, where they appear to belong. They are attached to a definite object, a human being, and afford knowledge of a certain produced quality.

It is probable that, as time goes on, this kind of statistical unit will tend to improve in character, quite apart from any statistical interest in such improvement. The modern tendency towards standardization of instruments and products is of increasing importance as markets become larger and productive processes more complex. Staple and standardized commodities are better suited to such conditions. Commercial variations in a given commodity that are not dishonest will tend to be fewer because the consumer will feel himself less able to cope with complexities. Statisticians and administrative officers will doubtless discover and apply means of preventing dishonest variations in commercial units. It does not so much matter what the unit is, provided it be fairly constant. That matters more and more, in practical ways as well as scientifically.

There are units which are intermediate in character

between the first and second orders. Such is apparently the family. In itself natural — at least there is a natural family — so many of its functions and traits are artificial or economic that the United States Census, perforce, defines it artificially. Yet inferences as regards the natural family derived from such statistics are not entirely bad.

The city also, so far as it is a statistical unit, has a similar intermediate character. Inequality of size would not be an objection to its use, tho any exploitation of such figures could scarcely fail to take account of this. If a fully natural kind, its definition would not, of course, hinge upon corporate geographical boundaries. But cities are rather too few in number for the "trees" to lose their individuality in the "forest," hence there is less need of, and less opportunity for, aggregate or statistical treatment of the city as such.

The business corporation is legally and in some other respects analogous to the city. Here there is certainly a "forest." There is no reason why we should not have true statistics of corporations. The unit is not perfect. It is in the main a produced unit, and the size and internal organization of corporations vary greatly. It is not entirely a produced unit, however, since it is a group of persons and has most of the qualities of the individuals who compose and direct it.

Whether nationality is a produced quality or a phase of a natural difference in kind may be doubted. It is a border case. A Frenchman may be of Teutonic stock, but he is French if his language, culture, and traditional sympathies are French. The characteristic element in statistics of immigration is usually nationality, hence such statistics are more of the second order than of any other.

Statistics of manufactured objects are gathered mainly by means of enumeration and their class or descriptive name will ordinarily tell much about them. But it will not always tell enough, even where much discrimination is exercised in determining what is to be counted and even when, also, the classes of objects are subdivided in the count. Hence a specially significant unit, one that is indirectly a unit of capacity, may sometimes be employed as a basis for addition and comparison. Thus statistics of cotton-spinning manufacture take as their unit the spindle. In some cases odd units may be reduced to a common denominator, as in the case of the standard 500 pound bale of cotton-ginning statistics.

Sometimes counting produced objects quite fails of its purpose and resort is had to measurement. Hence statistics of capacity in combination with number, examples being the tonnage of ships, the capacity of grain elevators and of engines for power production. This case is transitional to the next class of statistics, where the unit is primarily a measure of size or capacity instead of a concrete object. Counting by size-classes or grades, however, may sometimes be preferable to measurement.

Physical Measurement Units

Physical measurement units compose the third kind of statistical unit. Examples of physical measurement units are the ordinary measures of length, of cubical capacity, and of weight, and measures of energy like the horse power and the kilowatt hour.

The size of such a unit is the result of accident and convention. The length of the foot of some king is as good as a decimal fraction of the miscalculated

circumference of the earth. The horse power may as well have a merely arbitrary as any other relation to the power of an average horse. There is no particular reason why the yard or the pound should count for one, except convention and convenience. There should be some common and familiar standard. What it is, signifies little. Similarly it is necessary to have a rule of the road, but whether it says that one shall turn to the right or to the left does not matter. That the unit be accepted as standard is all that is necessary. There is a marked contrast between this situation and the way in which the statistical unit is determined for a natural kind. There we find nothing arbitrary or conventional.

But, tho the fact that units are merely conventional does not matter, there should be no variability or ambiguity in the convention. Our abominable English weights and measures include several different kinds of pounds, tons, quarts. Quantities reported in tons are only presumptively known unless the unit is described every time it is given. The most definite schedules are likely to be filled carelessly.

Engineers have been too ready to accept a situation as regards their peculiar technical terms which is not much better. Statistics of rated capacity of power equipment suffer considerably from lack of standardization. But the engineering societies are now attending to such matters. Mention may be made especially of the American Institute of Electrical Engineers. The work of the National Bureau of Standards insures steady improvement in metrology generally.

The very fact that the unit is a measure more or less arbitrarily arrived at, and incidentally become customary or standard, suggests its limitations. Measuring ignores individuality and disregards all but one

of the qualities of the objects measured. In statistics of the third order we no longer count the members of a kind and in naming also describe them. The significant relations of a measurement unit to things in general must, of necessity, be narrow because unilateral. They take account of only one thing at a time. A particular steam engine has a determinate relation to the men who run it and to the machines for which it furnishes power, but "ten horse power" has no such relation to other things. It tells something about an engine, but does not mean the same for a ten horse power engine as for one of a hundred horse power. It is more important to know the number of engines and their size (by classes) than their aggregate power. But we sometimes have to be content with horse power alone.

Measurements always involve abstraction. A measurement gives length, or cubical contents, or specific gravity, any one of which abstracts from all but a single quality or relation. Diverse measurements may give several such facts about a series of objects, but the results are still abstract. If we are to learn about the real concrete things it must be by way of supplementary or collateral information, not always statistical in character. Capacity may be measured, disregarding shape; weight, disregarding material; the figures thus limit themselves. The counting of discrete natural objects, on the other hand, gives numerical knowledge which can be supplemented to any desired extent by reference to natural qualities.

When objects are both measured and counted, which is to be regarded as the primary datum? On the whole the counted object should be primary because of its superior character as a unit, tho the greater importance of the measurement unit may sometimes outweigh

this consideration. It is well, whenever possible, to have both sorts of quantity and also to have the two clearly related, *i. e.*, the numbers by sizes or by size-classes.

Sometimes what appears to be measurement is in effect only a quicker way of counting. It may be more convenient to determine the number of new coins in a package by weight than by tale. But the result is not less a number of coins. Commodities are often weighed merely because this is the best way to arrive at their amount. Bushels are used to measure grain. The object so measured is a natural kind composed of individual things. Relations to other things, for example to nutritive value and tastiness, are not at all left out of account. In these cases measures are not resorted to because of diversity of type and of size among the objects, as in the case of produced articles such as generating engines. Natural kinds seldom require this, even where we are directly interested in their size, for they vary regularly about a representative mean. But the size of some marketable products is so largely produced that it has almost ceased to be a natural property of the kind; hence, there is a tendency to determine quantities of such things by weight, even when the article is sold in its natural state. If it is becoming true, however, that eggs should be sold by weight instead of by count, this is chiefly because of the work of the breeder in developing marked varieties of the domestic fowl. The size of the egg is coming to depend on the breeder's art.

Measurement aggregates may consist of one continuous quantity or a homogeneous mass, or they may relate to a miscellaneous lot of individual things which are varying multiples of the measurement unit. The

latter case seems to be the more frequent in statistics, perhaps because the more evolved and individualized things, whether made such by nature or by man, that is whether biological species or manufactured articles, are of more interest to us. But it is probably with the former class of materials that measurement begins, later extending to objects that might also be counted. The homogeneous material may, of course, be a natural kind, but not of the most interesting order. So far as it is such, a measured amount of it, of water or sand, for example, may have some of the advantages of the first order of unit — some only, however, because such unintegrated matter too readily mixes and mingles with other things.

Accuracy of measurement deserves notice in this connection by way of distinction from accuracy of counting, and also for comparison with it. The definition of the measurement unit offers practically no difficulties. The number of units to be recorded usually involves some mathematical computation upon the basis of comparison with a standard measure, or it may be obtained by estimation upon a more or less objective basis. There is not so much difference between measuring and objectively estimating quantities as one might easily assume. The view of an expert with the time and facilities for applying objective tests to check his results is worth much more here than it is in the field of counted units. The method of sampling can, in this case, if intelligently used, be adequate for most statistical purposes. The way in which several measurements are employed to check each other by the physicist and mathematician and are assumed to be inevitably more or less approximate, illustrates the necessary inexactness of human measurement and also suggests that " mathematical exactness "

may often be practically unimportant as well as unattainable. If we dealt with the objectively checked estimates of impartial experts as the mathematical physicist deals with quantitative observations, we might find them very nearly as good for most of the purposes of statistics as " exact " measurements.

It sometimes happens that the reduction of odd articles to a common measurement standard is desirable. Provided the material contained is homogeneous, little is lost. But caution in the use of this short-cut is imperative. The day's work, for example, is not merely so many hours of work. A 16-hour day is by no means equal to two 8-hour days; nor is a 48-hours-a-week schedule the same regardless of how or when the time is put in. Sometimes administrative regard for facility of enumeration may cause a too easy acceptance of the measurement unit in such cases, when varieties and their relative importance are quite as interesting as totals and averages.

Some statistical units in common use are compound. This is especially true of units of physical capacity and performance, that is, of such as have the characteristics of our third class. Such a unit usually takes up whatever disadvantages pertain to both its terms. The foot-pound is only apparently such; its compound name resulting from the attempt to make concrete an abstract conception. Foot-pounds per hour is truly compound; hence horse power is compound. The car-mile and car-hour are compound. The vagueness that attaches to these units follows from the character of the basic unit, which is of the second class. It is important to know the size of the car and whether trailers are used. But the grade and curvature of the road also affect the significance of such a unit. If the idea is to measure the potential service performed by a passenger

car, the seat mile is more to the purpose. One term of this unit is of the first order. The ton-mile unit is of the third order as regards both its terms. But data for ton mileage and seat mileage do not make it possible to dispense with car mileage.

Comparability is the fundamental desideratum of statistical data. There is no difficulty about it with natural kinds. There is a good deal with produced objects. The difficulty is apparently met by the use of measurement units, but the solution is often apparent only. The additive quality is secured, but perhaps at the cost of losing trace of important relations to other things. Hence measurement as a means of obtaining a total aggregate amount is to be considered a supplement to, not a substitute for, counting, whenever the quantities dealt with are composed of discrete natural objects.

The Pecuniary Unit

The fourth order of statistical unit is the unit of commercial value. It is possible that some other than the monetary measure might be found that could serve as a basis for value statistics. In fact, however, the only sort of unit we use is something reducible to the dollar. Whether any and all statistics of this fourth class should be called financial, or financial and commercial, as seems to be the tendency, is questionable. But financial statistics are representative of the class.

One reason why the pecuniary unit bulks so large in common statistics, including business statistics, is because it is the most universal of common denominators. There is not much of practical interest in the world that does not, at least occasionally, have a

pecuniary value assigned to it. Nor is the tendency to attribute to all things a pecuniary value so reprehensible as is often alleged. The error, which is a moral as well as intellectual error, consists not in the extended application of the pecuniary measure, but in supposing that it has an intensiveness, comprehensiveness and independence of meaning which is foreign to its nature. Just because of the general applicability of the dollar as a common denominator, its definable content and meaning must be small. All measurement units suffer by reason of their abstractness. The most universal of common denominators, despite its fundamental interest for every human being living in an exchange economy, will naturally suffer most in this way.

In citing examples of the fourth order of statistics we can hardly refrain from commenting on their quality. Statistical inferiority is characteristic of numerical data based upon the pecuniary unit. A review of examples of such statistics becomes a process of learning why this is so. Hence this judgment may as well be put at the front of this section. It applies with full force, however, only when the pecuniary unit is used by itself and as standing on its own bottom.

Financial reports are the sources of most pecuniary statistics. Our statistics of railways, in the main pecuniary, are among the best examples of the class. An authoritatively prescribed uniform system of accounts will make them vastly better than they were before. Statistics of assessed valuation and of taxation are a less developed variety of the fourth order. But, if we wish to prove that we are economically better off than were our forefathers a hundred years ago, it would be sounder to argue less from the increase in *per capita* wealth than from the application of inven-

tion to promote abundance and variety of goods. Statistics of export and import trade are almost altogether pecuniary as to their unit, largely because of a possibly too great regard for administrative convenience. Hence it is not easy to determine just what is the status and recent tendency of British trade or just what our own trade balance signifies. Aside from disturbing factors peculiar to international trade, the level of prices changes with time and place and with it the meaning of the pecuniary unit. Finally, our statistics of capital and capitalization are most completely pecuniary. Despite great practical interest in them, all such data are, as compared with demographic statistics, scientifically barren. The almost exclusively practical interest of their compilation is no sufficient explanation. On the contrary, this should provide richer and better material for analysis by the scientifically disposed.

One reason why pecuniary statistics are so generally unreliable as to their comparability, and therefore as to their significance, is because they are usually derived from books of account. Accounting theories and practices are anything but uniform as regards their treatment of particular items. Indeed, less elasticity of method and usage would often serve less well the purposes of business men. Accountants, for their lack of breadth of view, deserve part of the blame. But the public interest in the intelligibility of financial statements is gradually establishing authorities to prescribe and compel uniformity in such matters. Until uniform systems of accounts have been in effect long enough to insure their smooth and accurate working, our financial compilations will fall much short of being entitled to the standing that should be connoted by the name statistics. Accounting entries

ought to have constant significance and comparability. The mere accountant has been too much inclined to make his own financial balances the *ne plus ultra* of his work.

The investor is likely to form his opinion of a stock on the basis of what it pays in dividends. But if he is alert he will consider rather the net income earned from year to year. Tho much speculation has just so superficial a basis, a dealer in stocks will go deeper. The investment expert of a broker or banker will go as far into a company's reports as there are data. He will, if possible, analyze the physical statistics. That he does not give more attention to such matters may be explained by the usual absence of the necessary information. Even the expert, however, is likely to give the investor chiefly the tabulations of gross and net income to which he is accustomed rather than educate him up to some understanding of the physical basis of profits.

If profits are really there, the basis is physical as well as economic. But the basis of net income as it stands in a company's report may be neither physical nor economic. With accounting methods not yet fixed and with the management unchecked by statistical indices of physical condition, it is quite possible, especially through maintenance accounts, to juggle with net income in ways that no superficial analysis will disclose. Depreciation can be charged only on an accrued or estimated basis and we have as yet no sufficient experience to check the basis, tho we have had plenty of experience of the arbitrariness and manipulation of maintenance charges. All this relates to property operated. Intercorporate relations and resulting elusive "other income" offer another handle for manipulation. The line between capital expendi-

tures and operating expenses is in its nature indefinite. That between expenses of the period and of other periods (or years) is equally so, especially on account of depreciation. Hence the necessity of honesty and — as a guaranty of honesty and competence — full data to enable the outsider to form an opinion. "Accrued" income may often be more properly described as contingent. Hence the "actually paid" basis of the federal corporation tax. The government can wait for the long run. But the outside investor may be "cleaned out" long before the consummation of long-term changes whose probable effect he is not permitted to see.

Merely financial reports are not adequate to the use to be made of them. It is of the essence of accounts that they cannot be so. "Net income" is as much a result of how the books are kept as of profitable business transactions. It should not by itself be the test of solvency but should be supplemented by full operating and physical statistics.

The inferiority of the fourth order of statistics, however, is due to more fundamental causes than arbitrariness of accounting practice. The dollar is intrinsically inferior as a statistical unit. The physical measurement unit as well as the pecuniary unit is the expression of a relation and not discrete; but the former can easily be so conceived while the latter cannot. The dollar unit is so completely abstract as to be not even imaginable. It is a measure of "power in exchange." But the dollar's power in exchange does not mean the same thing to any two persons. Even if subjected to the test of actual exchange and determined by market conditions the purchasing power of a dollar fluctuates, hence estimation must be resorted to and allowance made

for time and place. Even then much depends on "whose ox is gored." Financial data usually have the character of interested estimates. Differences in valuation are not mere variations around a mean and are not moderate. Hence they are not easily dealt with or lightly to be disregarded. Reducing to a fine gold equivalent is merely a way of getting around diversity of currency. Changes in rates of exchange are a minor adjustment, for custom and "psychology" are factors in price. The symbol is familiar and constant. That for which it stands changes in ways not easily determinable, certainly not to be simply ignored.

The method of index numbers — itself a nice problem in statistics — largely meets such difficulties with the value unit as are due to changes in time. Logically, however, the index should change with every purpose for which statistics of the fourth order are used. The proportionate weights of the prices of particular articles which are determined by the consumption of wage-earners in a manufacturing community seem to be of greatest use. But they are not therefore generally adapted to all purposes, even tho adjustment of the weights cannot be alleged to be indispensable.

The financial statistics showered upon us do not have the definiteness of meaning that statistics may be expected to and *ought* to have. Efforts should be made to close the existing great gap in scientific character between financial and demographic statistics. For taxation and financial administration and for the public control of corporate management, adequate statistical data will become more and more necessary. This refers to the need of governmental action. Purely private interests (if there be such) are also involved. Many large corporations are coming to feel that they

ought to make the knowledge of their operations accessible to the public, at least to their actual and possible stockholders. The statistician thus tends to be a necessary aid in the conduct of every large corporate enterprise.

A suggestion of the direction which improvement will take is contained in the rather obvious proposition that economic and pecuniary statistics are not necessarily the same. The backward state of economic statistics, as compared with demographic, is doubtless largely due to a too ready acceptance of figures of value as a satisfactory answer to economic questions. But economic statistics need not be so superficial. They will, when fairly complete, doubtless contain values, but will not be composed of them. Statistics of manufactures and trade ought to present quantities and kinds of products as well as values or prices. Our agricultural statisticians do this very largely, tho they too sometimes seem to prefer to detach the values from all other numbers relating to their data. Even where the interest is purely commercial or financial the trend is towards more adequate figures. We are told of tons of rails produced as well as of the value of the output. It would be still better to have the kinds specified, *i. e.*, the weight per yard and the material, perhaps also the shape, — things which, it should be observed, are seldom necessary in statistics of natural kinds. Our numerous practical " statistical " manuals designed for investors need to pay more attention to such possibilities. But the large corporation must first appreciate the importance of compiling and making public more adequate data.

Index numbers have been referred to above as affording a way out of some of the difficulties of statistics resting upon the pecuniary unit. This is a way to

get beyond pecuniary value and down to concrete goods. We may thus learn what the dollar means in terms of necessary articles of consumption. The device is practically the determination of an equation between money and commodities. The principle of this solution ought to be more generally applied.

A Way to Better Statistical Material, especially to Better Economic Statistics

While it is of some scientific interest to distinguish different orders of statistical units and of statistics, what the distinction is really worth depends upon what purposes it may serve. For statistical practice the important question is: How can the inferior orders of statistics be improved?

Statistics first achieved scientific standing in the field of vital statistics and demography, that is, in a general way, among natural kinds. Whether as an extension of the view-point of "political arithmetic" or as an intensive development, statistics that are something more than mere numbers have come rather later in other fields. Among the divisions of our federal census the volumes on population are, as statistics, the best; those on agriculture (the units here also being chiefly natural kinds) rank next; and last or lowest in quality are the statistics of manufactures, the reason being that the unit is too largely pecuniary.[1] One might well infer that our statistics of manufactures should be made less dependent on the pecuniary unit. This is not meant to imply that our census officials are unaware of the need.

[1] The defects of the volumes on vital statistics — the statistics obtained by enumeration as distinguished from the recent compilations of mortality registration records — do not vitiate the comparison because their condition is due mainly to an accident in the development of our statistical administration.

The way to improve pecuniary statistics is to relate values and prices, present and past, to the things to which they pertain, or rather to the statistics of those things. Pecuniary statistics should be, so far as possible, either accessory to or supported by statistics of higher orders. An amount paid in wages immediately provokes a question as to the number and kind of wage earners, how long they worked, and whether on full time or part time. It is not enough to know the value of our exports of a particular class of commodities, tho the difficulty of defining varieties does in part excuse the shortcoming. Railroads want to know the relation of expenditures to work done, hence ratios of cost and of traffic to various operating units, expenses and revenues per train-mile, ton-mile, etc. New uses of such units and ratios are constantly appearing. Detailed power and wage statistics serve the same purpose and will soon be considered a necessary part of the classified and analyzed records of any large private corporation. It is a need of our mental nature that values be predicated of definite things. As the workings of our minds are pragmatic, this need points to a function.

Especially statistics of capitalization need to be related to the statistics of capital or of the means of production upon the basis of which securities are issued. This happens to be a degree removed from the direct interest of active business men, hence "neglect" does not sufficiently describe their attitude in the matter. Some of the uses to which physical valuation might be put may reasonably be objected to, but to the thing itself there is no valid objection. The investor should be put in position to know his property. The only way in which such knowledge can be conveyed to his understanding in the case of a large corporation

is by statistical description. This is the foundation and essence of physical valuation. A corporation cannot properly have secrets. Especially in relation to its stockholders, its duty is not merely the negative one of abstaining from withholding information. Even if the corporate net income be the basis upon which the investor buys the stock, its stability as well as its amount is important and the probable stability of the income depends chiefly upon an adequate physical basis.

Economists of a certain tendency share with business men the blame for inadequate notions of how financial statistics ought to be looked upon, at least as regards the phase of them that relates to capitalization. The capital value concept is useful and important. The attempt to wash out the distinction between capital as a sum of value and capital as concrete means of production, or what amounts to this, to ignore the latter meaning, is very much the opposite of useful. The dominance of the corporate form of organization makes it important not to destroy, but to develop the idea of capital as concrete means of production. The small individual entrepreneur does not know less of what he possesses by reason of the fact that he reduces all to terms of value as a common denominator. The stockholder of a large corporation is differently situated. He can know what he possesses and how it is being used only by means of adequate physical and operating statistics, including data of performance, duly reported to him. Mere balance-sheet and income statements are not sufficient. Here is where the capital-value theorists may have occasioned some distraction of attention from real needs. With adequate inventories of extant properties, capital assets could not be made to include dead horses, tracks removed, obsolete and unused implements, all and

sundry covered by combination and by temporary monopoly or other advantage, without security for the continuance of such advantage and thus with loss to the investor. Uniform accounting systems should largely take care of this need as well as of the proper treatment of accounts in the customary narrower sense, as distinguished from records.

Accounts should, in general, be supplemented by records or statistics, tho the word so used sounds pretentious. The inventory made once a year, or oftener in the case of a mercantile stock, should not be dispensed with in the case of fixed capital. Tho it need not be made so often, we know that fixed capital also may disappear in ways not accounted for. Corporations have their "storekeepers" who carefully check and record whatever materials and supplies they receive and issue. Should not there be records also of the more valuable tangible assets? As statistics constitute the state's means of knowing itself, so the only available means by which a large corporation can know itself are likewise statistics, both physical or static statistics and operating statistics. So far as size is the compelling factor, there are modern business corporations quite as large as were important states when statistics first began to be.

So-called cost accounting, or cost keeping, occupies much the same position in relation to operating statistics as does physical valuation in relation to the knowledge and quantitative estimation of fixed investment. It is an attempt to show the connection between fundamental physical facts — quantity and kinds of raw materials, labor time of various sorts, space and power required — and the quantity and value of products. It is essentially statistics rather than accounting, since in it numerical comparisons are more

important than the registering and balancing of pecuniary obligations. The development of cost-keeping in the business world is a phase of the increasing importance of statistics.

Any considerable acquaintance with compilations of numbers in tabular form should make it clear that not all figures are statistics, nor all figurers statisticians. Economists without special statistical interest or training have probably contributed to the general misconception of statistics as merely masses of figures. The large corporation is now coming to feel it desirable to have a statistician, tho he is still likely to be regarded as a special kind of clerk, one who is " quick at figures." Sometime it will be recognized that neither an accountant's nor an engineer's training specially qualifies for statistical work. The statistician should be grounded in demography and familiar with the statistical methods used in dealing with natural kinds, no matter how " practical " his later work is to be. It is true also that he cannot have too realistic a knowledge of his special field. The differentiation between the accountant and the statistician will probably come to mean that the latter is specially competent to deal with physical things in their numerical and quantitative aspects by means of methods suggested by a study of the higher orders of statistics.

Figures are symbols. They serve only to connect our thoughts with things. Not all statistics do this with equal directness and sureness. It holds especially of figures based upon the commercial unit of value that the meaning is not self-evident. The measure of value is less intelligible than physical measures. Statistics based upon measurement units are, in general, less good than counts, whenever the kinds counted are adequately classed and of well-defined character.

Realistic comprehension is scarcely possible with value measures unless they are definitely related to things. Things valued should be also defined and counted, or at least physically measured. The statistician must see the quantitative relations of the numbered things, not the mere symbols or numbers. As statistics becomes of greater recognized importance and as its methods are applied to more and more branches of knowledge — being thus of doubly increased significance — the greater will be the need to attend to such considerations as are mentioned in this paper. We shall supplement statistics of produced kinds with measurements, instead of beginning and so largely ending with the most abstract of measurement units, thus getting the cart before the horse. Without implying that the other orders cannot sometimes be helped by extending quantitative enumerations and analyses to cover value, it is clear that the latter kind of statistics has much less to give than to receive.

To say that pecuniary statistics are less good than pecuniary statistics plus other kinds of related figures supporting them, is an affirmation of the obvious. Yet this fact needs emphasis. Pecuniary statistics greatly need such support. Nor is it quite true that the rule works equally well the other way. The pecuniary unit is the weak member which ought as little as possible to be left to stand alone. Stated values are seldom disinterested and their basis is never quite objective. We need always to know kinds and grades and their numbers or quantities, along with values. The foundation of all statistics should be in natural kinds or in the best obtainable substitutes for them.

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SOME PROBLEMS IN MARKET DISTRIBUTION

SUMMARY

Lack of systematic study of market distribution. Emphasis on production explained by economic causes. Importance of a better organization of market distribution, 703. — Complexity of the problem facing the distributer. Consumer's surplus. Bearing on the distributer's problem, 707. — Selling at the market minus, selling at the market, and selling at the market plus, 712. — Social justification of the differentiation of commodities: Importance of trade-marking, 718. — Methods of sale: sale in bulk; sale by sample; sale by description, 721. — Available agencies for selling: middlemen, producers' salesmen, and advertising, direct and general, 723. — Emergence and rise in importance of the middleman. Modern tendency to decrease number of successive middlemen, 725. — Analysis of the functions of the middleman: sharing the risk, transporting the goods, financing the operations, selling or communication of ideas about the goods, and assembling, assorting, and re-shipping. Development of functional middlemen. Advantages of direct selling in some industries. Present day importance of the direct selling in some industries. Present day importance of the middleman, 731. — The producer's salesman as an agency in distribution, 740. — Advertising as an agency in distribution: relation to sale by description; relation to trade-marking; analysis of classes of demand created by advertising, 742. — Social waste in distribution. Practical problem of distributer, 746. — Analysis of market into geographic sections and economic and social strata, 749. — Laboratory study of distribution, 754. — Wide application of such method of study, 758. — Possibility of better organization of distribution, 763.

INTRODUCTION

THE business man is concerned with the production and distribution of goods. Factory production he finds relatively well organized. The era of the rule of thumb is passing, and the progressive business man can call upon the production expert, technically trained, to assist him in solving his problems of pro-

duction. But the marketing of the product has received little attention. As yet there has hardly been an attempt even to bring together, describe, and correlate the facts concerning commercial distribution. Selling is on a purely empirical basis.

The progress that has been made in organizing production is the result of systematic study. For centuries attention has been concentrated on the problems of production. Methods of study that have proven fruitful in other fields have been applied to the problems of manufacture and a body of organized knowledge is being built up.

Now the problems of market distribution are no less worthy of systematic study than are the problems of factory production. It is as essential that the finished goods be moved from the stock room of the producer to the hands of the consumer, as it is that operations be performed upon the raw material to produce the finished goods. And the problems of marketing are even more complicated than the problems of manufacturing, because the human factor is of more direct importance. Hence the rule of thumb can be less depended upon in distribution than in production.

Why has not systematic study been given to the problems of distribution? The explanation is found in a glance back in our economic history. Chief among the causes for the industrial changes leading to the establishment of the factory system in England in the eighteenth century was the constant widening of the market. It was a rapidly increasing pressure on the producer for greater quantities of staple articles for mass consumption that gave incentive to the revolution in the method of production. For a century thereafter the necessity of supplying a continually widening market, as means of transportation steadily

improved and the population increased with unprecedented rapidity, made production the dominant problem. Economic conditions have put the emphasis on production.

Where the felt need is greatest, there will the organizing ability of the human race concentrate itself. The problems of production were sensed as the most pressing that faced society. He who improved methods of manufacture to increase output or reduce cost reaped a large reward. Hence the ablest minds were drawn toward the solution of those problems. The business manager gave his best thought to the difficult task of producing more goods at lower cost. The constantly widening market made selling a simple problem.

As a result we have built up a relatively efficient organization of production. While much remains to be done, the resources of modern science are being utilized to improve and organize our agencies of production. The development of producing capacity has been tremendous. New processes have been and are being introduced. New forces have been called into play. Methods are constantly being scrutinized to effect a more economical and efficient organization of production. The recent introduction in many industries of so-called "scientific management" is only a partial crystallization of long years of progress.

While we are but upon the threshold of the possibilities of efficiency in production, the progress thus far made has outstripped the existing system of distribution. If our producing possibilities are to be fully utilized, the problems of distribution must be solved. A market must be found for the goods potentially made available. This means, in the main, a more intensive cultivation of existing markets. The unformulated wants of the individual must be ascertained

and the possibility of gratifying them brought to his attention.

There are some, to be sure, who deplore the increasing complexity of human wants. This is a problem for the philosopher, not for the business man. Our whole civilization has been characterized by an increasing standard of living due to the demand on the part of the individual for more goods and more highly differentiated goods. The business man finds his practical task in searching out human wants and providing the means of gratification.

Not only does the chaotic condition of distribution act as a check upon further development of production, but it also involves a tremendous social waste. The consumer pays for "lost motions" in distribution as surely as he does for "lost motions" in production. Society can no more afford an ill-adjusted system of distribution than it can inefficient and wasteful methods of production. The social cost is no less real.

The most pressing problem of the business man today, therefore, is systematically to study distribution, as production is being studied. In this great task he must enlist the trained minds of the economist and the psychologist. He must apply to his problems the methods of investigation that have proven of use in the more highly developed fields of knowledge. He must introduce the laboratory point of view. To that end, an attempt is here made to outline some of the problems of commercial distribution from the point of view of the business man, to analyze them, and to point out some methods of systematic study of these problems.

Present Day Problem of the Distributer

The problem presented by the United States as a consuming market is a complex one. Here are ninety-odd million people distributed over an area of more than 3,000,000 square miles (excluding Alaska). Some are gathered in the large cities, where millions jostle elbows. Some are scattered over great areas with considerable distances between them and their neighbors. Some daily pass hundreds of retail stores; some must ride miles to reach the nearest store. Wide extremes in purchasing power exist. Millions have a purchasing power scarcely sufficient to obtain for themselves the barest necessities of life. A few can satisfy the most extravagant whims of the human imagination. Between these extremes lie all degrees of purchasing power, the number in each class becoming greater as you descend in the scale of purchasing power.

Their wants are as varied as their purchasing power. Environment, education, social custom, individual habits, and all the variations in body and mind tend to render human wants diverse. In each individual there are certain conscious needs being constantly gratified by the purchase of goods produced for such gratification. Then there are the conscious needs which go ungratified because of the limitations upon purchasing power and the existence of other needs of greater felt importance. And then there are the unformulated, subconscious needs which fail of expression because the individual is ignorant of the existence of goods which would gratify them. Twenty years ago, to illustrate this last class, there existed in the farmer, far from a barber shop and clumsy in touch,

an unformulated need for a safety razor. Today, the distributer forces upon his attention the existence of such a device and the unformulated need finds expression in effective demand.

The accepted system of distribution was built up on the satisfying of staple needs. The pressure of the market discussed above made it unnecessary for the business man to search out unformulated human needs. Only in recent years, when the development of production, potentially outstripping the available market, has shifted the emphasis to distribution, has the business man become a pioneer on the frontier of human wants. Today the more progressive business man is searching out the unconscious needs of the consumer, is producing the goods to gratify them, is bringing to the attention of the consumer the existence of such goods, and in response to an expressed demand, is transporting the goods to the consumer. The task is one of adjustment. The materials and forces of nature must be bent to human use.

This sort of activity has not only built up new consuming power in the market, and contributed to the progress of civilization, but has given rise to new price policies that have undermined the old organization of distribution in staple lines. Hence it is important in outlining the present day problem of distribution to give special attention to the more progressive distributer, rather than to the typical distributer.

It is not alone to revealing and gratifying unformulated wants by the creation of new goods that the more advanced business man turns. He finds like opportunity in the difference between the market price that has come to be established for a known commodity and the varying subjective valuations placed upon such a commodity by consumers of differing purchasing

power and of differing social position and individual habits.

The economists tell us of the " consumer's surplus." Briefly, this is the difference between the market value for a commodity and the subjective value of the commodity to the individual consumer. Each individual sets up for himself a ratio of exchange between commodities which finds expression in the price he would be willing to pay for a given commodity rather than go without it. These subjective valuations constitute the demand side of the market. The interplay of supply and demand gives rise in a competitive market to a market price at which the consumer can obtain the commodity. Now if this market price is above that fixed by the subjective ratio of exchange of the consumer, he drops out of the market, utilizing his purchasing power to secure other commodities. But if the market price is below that which the consumer would be willing to pay to obtain the commodity, he purchases at the market price, and the difference between his subjective ratio of exchange and the objective market ratio of exchange constitutes his " consumer's surplus." The man of means, for example, purchasing his morning paper for a cent, would still purchase if the price of the paper were fixed at five cents, at ten cents, or possibly more. Somewhere in the ascending scale a point would be reached at which even the man of means would drop out of the market. But long before that point was reached the less well-to-do of the possible readers would have ceased to purchase the paper. And the difference between the price at which the well-to-do man would drop out of the market and the market price of one cent which he actually pays, represents his " consumer's surplus."

The more able distributers turn, tho usually unconsciously, to the existence of this margin as the basis of a demand for what is to all intents and purposes a new commodity. That is, they differentiate a product from a staple commodity for which a market price has been established and establish an effective demand for the modified product upon a new price level, higher than that established for the commodity of which it is a modification.

The means used for differentiation are numerous. Sometimes slight modifications render it better adapted to the use to which it is put. Sometimes niceties of trimming and equipment are utilized. Sometimes a new and more convenient style of package is used. Sometimes the distributer builds up an atmosphere of good taste about the goods, or a reputation for constant quality which insures the consumer against dissatisfaction. Sometimes the distributer depends upon "service" or special conveniences to the consumer provided as collateral to the commodity.

Always, however, the aim is to isolate his product from the stock commodity of substantially like nature. And nearly always the distributer utilizes trade marks, brands, or trade names to identify his product as a distinct commodity.

He must then convey to those consumers whose subjective ratio of exchange would have led them to pay a higher price for the stock commodity before transferring their demand to other goods, knowledge of the existence of his differentiated product at a higher price level. By calling attention to the superior qualities or convenience, or constant reliability of his differentiated product, he transfers to it a portion of the demand that formerly found expression in the purchase of the stock commodity.

The marketing of hats furnishes a good illustration of this development. If derby hats were distributed as a staple, unbranded and at a single market price for a given quality, many consumers would pay perhaps $3.00 for a staple hat, whose individual ratio of exchange would render them willing to pay more than $3.00 for a hat rather than go without. But certain producers have distinguished their hats from the staple hat by their brand. By calling the attention of the consumers to niceties of trimming and finish, and by emphasis upon design, some such producers have built up a demand for their hats at $5.00. Now these trade-marked hats and the staple, unbranded hats selling at $3.00 are substantially the same commodity, but are differentiated by detail modifications. These detail differences render the well-to-do consumer willing to pay a higher price for the trade-marked hat. No doubt the demand for the more expensive hat depends in part upon the sense of security on the part of the consumer that his hat will be of good quality and of proper shape if it bears the name of these producers. This feeling of security forms a part of the subjective valuation that the consumer places upon the hat. No doubt, too, motives of pecuniary emulation sometimes enter in, and the consumer derives a portion of his gratification from the mere fact that he purchases a hat which sells at a higher price than those purchased by his less well-to-do neighbor.

It is of interest to note that other manufacturers of branded hats have in recent years fixed their prices at $4.00 and $6.00, appealing to consumers upon different price levels from those reached by prior distributers of trade-marked hats. Thus they reach with a $4.00 hat a group of consumers not available to the distributers of $5.00 hats because their subjective

ratios of exchange did not render them willing to pay $5.00 for a hat. And with a $6.00 hat they draw from the distributers of $5.00 hats a part of those consumers whose subjective valuation upon a hat rendered them willing to pay more than $5.00 for the commodity.

The activity of the more advanced distributers in differentiating commodities has tended to break down the orthodox methods and policies of distribution, and this necessitates an analysis of the possible price policies of the present day merchant-producer.

Price Policies of the Distributer

The producer who today enters the market to manufacture and sell a commodity in competition with other producers of substantially identical products has open to him three general price policies. He may adopt one of these to the exclusion of the others, or may use them in combination.

These three policies may be termed, (1) Selling at the market minus, (2) Selling at the market, and (3) Selling at the market plus.

(1) *Selling at the market minus* is that policy which aims to increase sales by reducing price. The distributer who markets his product at a price range below that established for the identical commodity as sold by other producers not only attracts consumers from other distributers, but also brings into the market as consumers certain of those whose demand was before unexpressed because the price level established for the commodity was above that warranted by their subjective valuation on the commodity.

This policy does not ordinarily involve a differentiation of the product from the stock product of like

nature, nor the use of trade marks, brands, or trade names. The producer depends upon increased sales to give a reduced proportion of overhead expense and reduced costs of large scale production, thus increasing his area of profit. The producer appeals to the consumer mainly through the difference in price level. Hence, the successful pursuit of this policy in a competitive market over a long period involves a continuing ability to sell the commodity for less than the price at which other producers of substantially identical products are willing or able to market them.

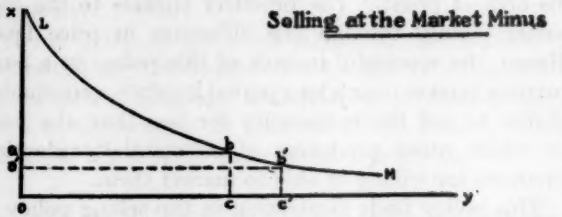
This policy finds illustration in the selling policy of most department stores. It is the basis of bargain counter selling. In one class of department store it becomes the dominant policy. Some such stores base their business almost entirely on selling under the market, advertising the purchase of bankrupt stocks and mill clearances as making possible such price cutting.

And in nearly all department stores the manager will at times reduce the price upon a staple commodity below that at which his competitors are willing to sell. His increased sales, arising from custom drawn from his competitors and from new consumers brought into the market, decrease the proportion of overhead expense and enable him to purchase in larger quantities. His larger purchases put him in a position to force the producer to share with him the economies of large scale production. Often, indeed, he is able to take over the entire output of certain factories.

In the department store, moreover, the further element enters that customers attracted to purchase a staple commodity at less than the prevailing price will also purchase other commodities yielding a wider margin of profit.

The working of this policy, especially as to bringing new consumers into the market, is shown graphically in Chart I.

CHART I



This chart attempts to show graphically the operation on the demand side of the market of the price policy termed "Selling at the market minus." On the ordinate ox is laid off a scale of prices for the commodity. On the abscissa oy are laid off the number of purchasers. The arc LM shows the number of purchasers at a given price, growing fewer as the price increases and greater as the price decreases.

Now if oa represents the prevailing market price for the commodity, and oc the number of purchasers at that price, it is apparent that if the price is reduced from oa to oa', the new consumers will be brought into the market and the number of purchasers at the price oa' will be oc', a number greater than oc.

It is somewhat in this fashion that the policy of selling at the market minus operates but the chart does not indicate the important element that other producers are selling at a higher level, and hence customers are attracted from them, as well as new customers brought into the market.

(2) *Selling at the market* has been the policy perhaps most characteristic of our scheme of distribution during the period when the stress was on production. It is still a common policy in the marketing of staple goods.

This policy consists briefly in the acceptance of the market price existing for the commodity as a fixed condition. The producer does not seek to attract purchasers by maintaining a price level somewhat lower than that at which other producers of the same commodity are willing to sell, nor does he attempt to establish his commodity upon a new and higher price level as a distinct commodity. He recognizes the market price for such a commodity as something objective, and sells his commodity at the established level.

The acceptance of this price policy leaves open to the merchant-producer two general methods of increasing his area of profit. He may devote himself to a reduction in his cost of production by a better organization of his plant, or he may seek to increase his sales, thus giving economies of large scale production and a reduced proportion of overhead expenses.

Examples of the adoption of this policy and the use of the first method of increasing profits are found in the steel industry. The small independent manufacturer often accepts the market price of a given steel product as a fixed condition, sells his "share" of the market, and depends upon reducing his plant costs to increase his profits.

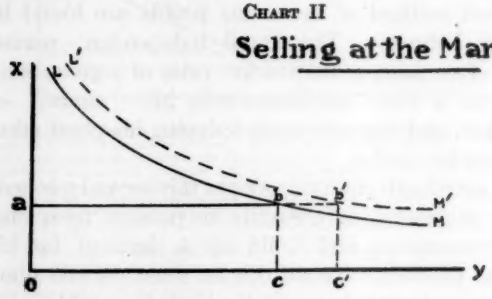
If the merchant-producer adopts this second method, he must, in general, differentiate his product from that of his competitors and build up a demand for his particular product. To do this he must depend upon the same means that would be used to establish his product as a distinct commodity upon a higher price level. Trade marks, brands, and trade names, coupled with niceties of finish, evenness in quality, or more convenient packages, serve as the basis for an increased demand for the commodity upon the same price level as substantially identical products. When selling at the market, superior promptness in delivery may become a factor of great importance in increasing sales.

A recent development in the textile industry illustrates the adoption of the policy of selling at the market, combined with an attempt to increase sales at the market price by a differentiation of the product. Apparently the textile manufacturers who are beginning to brand their goods do not seek to establish a new price level for their product as a distinct commodity, but rather to increase their sales by building up a

demand for their commodity as against the product of other manufacturers at the prevailing price level.

Chart II illustrates one phase of this policy. It is intended to bring out the idea that new consumers may be drawn into the market at an existing price level by giving to the differentiated commodity a subjective valuation on the part of the consumer

CHART II



This is an attempt to show graphically the effect of a stimulation of increased demand for a commodity without any increase in the price at which it is marketed.

The ordinate, OX, is a scale of increasing price. The abscissa, OY, shows the number of purchasers. The arc LM indicates the number of purchasers at any given price, growing less as the price is increased and greater as the price decreased.

If the established market price is represented by OA, the number of purchasers at that price will be represented by OC. If then by stimulating an increased demand for his product, the merchant-producer is able to increase proportionally the number of purchasers at each price level, the demand curve LM will be replaced by L'M', and at the price, OA, a greater number of purchasers, OC', will purchase.

This chart does not, of course, show how customers already in the market are drawn from other merchant-producers to the purchase of a differentiated product for which a demand is stimulated at the same price level as the products of the other merchant-producers.

greater than that which he experienced for the stock commodity of like nature. Hence, while the individual's subjective ratio of exchange was too low to lead him to purchase the stock commodity at the prevailing price, he may purchase the differentiated commodity at that price because of his greater subjective valuation upon the latter.

(3) *Selling at the market plus* is perhaps the most characteristic price policy of modern distribution.

The exceptionally able distributers have in recent years turned more and more to this policy. They refuse to accept as a fixed condition the market price for the commodities similar to those which they produce. They isolate their product, and establish it, practically as a new commodity, on a different price level.

The whole basis of the policy is the differentiation of a product from other goods of substantially like nature by improvements, minor or substantial, and the identification of the product by trade marks, brands, and trade names. This done, the producer stimulates a demand for his product by calling attention to stability of quality, niceties of finish, improvements in package, or like modifications. He appeals to that portion of the consuming public whose subjective valuation upon the stock commodity has left them a so-called " consumer's surplus " over the market price. The differentiated commodity is established on a new and higher price level, and is, to all intents and purposes, a new commodity.

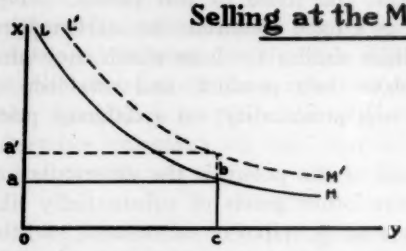
It is this policy that forms the most severe test of the ability of the distributer. To succeed he must have an unusual equipment, including knowledge of human nature, of the psychological organization of the individual consumer, and must be able to give proper weight to such motives as social emulation and all the varied factors that enter into the subjective ratio of exchange of the consumer.

This policy has already been illustrated by examples from the hat trade. Examples are all about us today and further illustration is here unnecessary.

Chart III shows graphically the operation of the price policy termed " selling at the market plus."

CHART III

Selling at the Market Plus.



This chart illustrates the effect of the price policy termed "selling at the market plus." On the ordinate is laid off a scale of prices for a staple commodity. The abscissa shows the number of purchasers.

The demand curve LM indicates the number of purchasers at a given price, growing less as the price increases and greater as the price decreases. Then if OA represents the market price of the staple commodity, OC will represent the number of purchasers. Now if the merchant-producer differentiates his product from the staple commodity and stimulates a demand for it, the effect is to increase the number of possible purchasers at each price level. Thus the demand curve LM is replaced by the demand curve *L'M'*.

Obviously the merchant-producer may dispose of the differentiated product at a price OA', higher than the price OA, without reducing the number of purchasers, OC. In other words, he can profit by the increased demand through raising his price rather than by increasing his sales.

SOCIAL JUSTIFICATION OF THE DIFFERENTIATION OF COMMODITIES

It is apparent that the process we see going on as a result of the increasing adoption of the policy of selling at the market plus, involving an increasing differentiation of commodities at various price ranges, is closely analogous to the creation of new commodities. When the hat trade splits up into a number of isolated brands, practically distinct commodities at different price levels, the situation is from a social point of view little different from that arising from the creation of new commodities which are not merely modifications of pre-existing commodities.

If the safety razor be regarded, as it properly may, as a new commodity rather than as a modification of the old style razor, it provides us with an opportunity

to examine the social justification for the creation of a new commodity.

When the first widely advertised safety razor was put upon the market at $5.00 a considerable margin of profit was left the producer. It was often said at the time that the actual cost of manufacture of that razor was less than $1.00. Now this wide margin made possible an extensive advertising campaign. The new device was brought to the attention of the entire consuming public. Everyone, whether in the large centers or remote districts, learned of the safety razor and its uses. Great numbers purchased the razor because the subjective valuation which they placed on the commodity, when it was brought to their attention, exceeded the price asked. The large reward received by the distributer may perhaps properly be regarded as compensation for bringing about a better adjustment to meet human needs.

Today the safety razor demand is well established and those consumers whose individual ratios of exchange do not render them willing to pay $5.00 for a safety razor are able to gratify their conscious need at prices ranging as low as $1.00 owing to numerous producers entering the market with safety razors at varying price levels.

Now when the producer of a commodity already marketed by other producers sets off his commodity from others of like kind, and by sometimes even minor modifications and improvements is enabled to build up a demand for it on a higher price level than that existing for the stock commodity of like kind, he, too, has made possible a more accurate adjustment in supplying human wants, and has brought the possibility of this more accurate adjustment to the attention of consumers. The purchaser of a trade-marked hat at

$5.00 would buy a staple hat for $3.00, if the $5.00 hat did not give him equal or greater proportional gratification, taking into account the differing objective ratio of exchange. Obviously, the consumer who buys a trade-marked hat does so because he prefers to pay $5.00 for such a hat rather than $3.00 for an unbranded stock hat. To say that he ought not to be willing to pay the additional $2.00 for the differentiated product because the modifications are not substantial is to attempt to substitute for the subjective valuation of the consumer as a basis of exchange an external social standard. The more highly differentiated the scale of commodities is, the more accurately will it be possible for the individual consumer to satisfy his varied material wants.

The distributer who is successful in establishing a differentiated product as a distinct commodity on a new price level is, for a time, in the position of having a monopoly as to the differentiated commodity. Such competition as he has is the indirect competition of the staple commodity of like nature. His monopolistic position often enables him to obtain temporarily a margin of profit disproportionate to the actual improvements in the differentiated product as compared with the staple commodity of similar nature. This, again, may be justified as a reward for enterprise in making possible a more exact adjustment of goods to the wants of the consumer. And in the long run, the large percentage of profit will decrease as other producers follow his example and differentiate their products from the staple. The rise of competition at the new price level will ultimately force in the competing differentiated commodities the substantial improvements warranted by the higher price.

Where the differentiation of a product from the staple

goods of like nature is not aimed at establishing a higher price level, but rather at an increase of sales at the prevailing price level, an indisputable social gain appears. Manufacturers admit that when they sell trade-marked goods they find themselves almost unconsciously putting a stress upon quality. The manufacturer of unbranded goods is in some respects like the writer of an anonymous letter; he does not have the sense of responsibility for satisfaction to the consumer that exists when the goods reach the consumers under his name. The manufacturer of unbranded goods makes his goods in general to sell to the middleman; not primarily to satisfy the consumer. It is the realization of this consequence of trade-marking that prompts proposed legislation such as the Campbell Bill, now before Congress, requiring every manufacturer to distinguish his goods by trade mark.

Methods of Sale

The general market problem which confronts the business man has been roughly analyzed. The differing modern price policies have been outlined. Something has been said as to the social justification of the increasing differentiation of goods involved in certain price policies. We now may examine the methods employed in selling.

In the early stages of our industrial history, sales were made in bulk. At all stages in distribution, the purchaser saw the actual goods before the sale was made.

Later, sale by sample appeared. The purchaser bought goods represented to be identical with the sample he was shown. The introduction of this method of sale was necessitated by the widening of the market

and was made possible by improvement in commercial ethics and by increasing standardization of the product. The purchaser must have confidence not only in the honest intention of the producer to furnish goods identical with the sample, but also in his ability to produce identical goods. Hence, increasing uniformity in product through machine methods of manufacture was a factor in the increase of sale by sample.

Sale by description is the most modern development in distribution. An even higher ethical standard is required than for sale by sample. Moreover, sale by description requires a higher level of general intelligence than sale in bulk or sale by sample. Sale by description in its modern development is, in a sense, a by-product of the printing press.

All three methods of sale are in use in modern commercial life. The consumer still purchases a large part of the commodities which he uses under a system of sale in bulk. He sees the goods before he buys them. The middleman, buying in larger quantities, generally purchases from sample. But sale by description becomes each year of increasing importance at every stage in the system of distribution. Even where the purchaser actually sees a sample or the goods themselves before the sale is concluded, the method of sale by description has in many cases previously been used to create in him a demand for the commodity. Sale by description is found not only in goods for consumption, but also in the sale of machinery and like commodities. So rapid has been the development that Mr. Edison, the inventor, has said that he expects the store of the future to be upon the slot machine plan, all the goods being sold by description. That even the conception of such an arrangement can arise is significant.

The root idea in sale by description is the communication of ideas about the goods to the prospective purchaser by spoken, written, or printed symbols. This takes the place of the sight of the goods themselves or a sample of them. It is obvious that this requires that the purchaser shall have sufficient intelligence to readily grasp ideas either through spoken, written, or printed symbols.

The use of the term " symbols " rather than " words " is necessitated by the fact that photographs and sketches are today an important feature of sale by description. A photograph of the commodity often serves the purpose of pages of verbal description.

The ideas to be conveyed to the prospective purchaser in sale by description are such as will awaken an effective demand for the commodity in question. The awakening of demand is the essential element in selling. It must be remembered, however, that the distributer has the further task to provide for the possibility of gratifying the demand by making the goods physically available to the buyer. In sale in bulk this problem merges with the selling since the goods are physically present when the sale is made, while in sale by description the physical distribution of the goods is a distinct problem from the awakening of demand. And it is a problem that requires equal attention, for it is useless to awaken demand, unless the goods to satisfy it are made available.

Available Agencies for Selling

As selling is the initial step in distribution, it is necessary to consider the agencies for selling available to the merchant-producer. There are three general agencies to be considered. These are (1) middlemen,

(2) the producer's own salesman, and (3) advertising, direct and general. The business man faces the problem of what agency or what combination of agencies is the most efficient machinery for the distribution of his particular commodity.

The method of sale adopted will largely govern the choice of agency to be employed. If the sale is to be in bulk, the purchaser seeing the actual goods before the purchase is made, distribution through a series of middlemen is generally most feasible. However, such sale in bulk through the producer's own salesmen is possible in some cases. Small household appliances are often sold in this manner by door-to-door salesmen.

If sale by sample is the general method adapted to the commodity in question, middlemen or salesmen will often be the more desirable agencies. Many commodities are distributed through middlemen, the sale at each stage in the process being by sample save for the final stage from retailer to consumer, where the sale is in bulk. Direct salesmen, perhaps in the majority of cases, sell from sample. And even selling by direct advertising alone is in some cases adapted to a method of sale by sample. Thus the distributer by mail of a commodity which is not bulky may enclose in his direct advertising material a sample of the commodity.

Where sale by description is used exclusively, advertising, direct or general, is likely to be the most efficient agency. Yet here again it is possible, tho generally not economical, to distribute a commodity through a series of middlemen and yet the sale at each stage be accomplished by description. And the use of salesmen in selling by description is common, as where heavy machinery is sold by the use of photographs, or hardware and like commodities from catalogs.

The number of possible combinations of methods and agencies renders the problem of the producer-merchant an intricate one. It will be seen that he has a difficult task in analyzing the market with reference to his goods, and in working out that combination of methods and agencies which will give him the most efficient system of distribution.

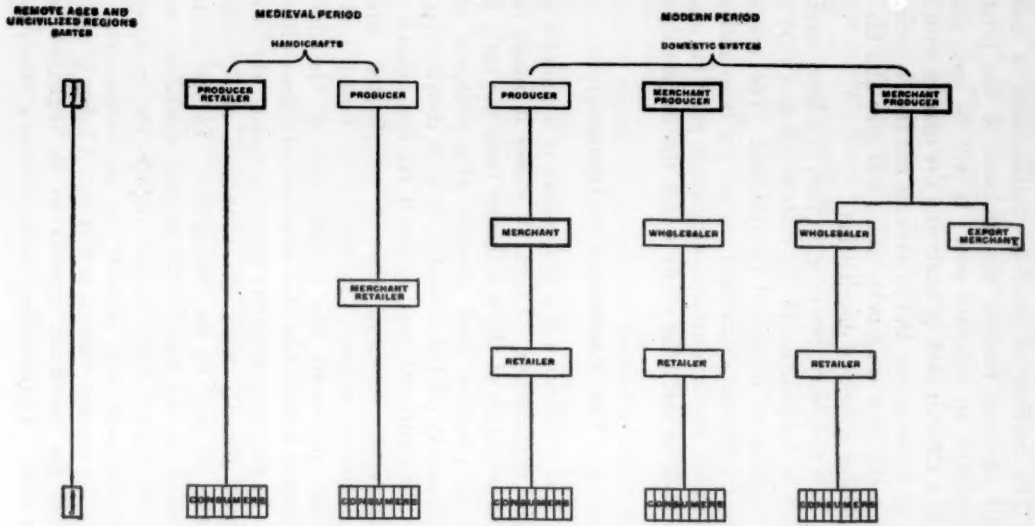
It is necessary, however, to turn to a brief consideration of the position of the middleman as a part of the evolution of organized distribution. The history of the middleman's functions has not yet been adequately studied, but a tentative suggestion may be made in default of the fuller study which the subject deserves.

The Middleman in Distribution

The middleman is a by-product of a complex industrial organization. Chart IV shows in rough outline the evolution of the middleman from the early period when producer dealt directly with consumer to the appearance of the orthodox type of distribution (late in the eighteenth century and in the first quarter of the nineteenth century) when a complicated series of middlemen existed. It should be noted that this chart represents the typical case of the domestic product rather than that of imported commodities.

In the more primitive barter economy, the producer deals directly with the consumer, and middlemen take no part in the transaction. In the mediaeval period, as the handicrafts become specialized occupations under a town market regime, the producer is a retailer and sells directly to the consumers. Then as the market widens, a division of labor is necessary and the merchant appears as an organizer of the market. The handicraftsman becomes a steady worker,

CHART IV
EVOLUTION OF THE MIDDLEMAN



no longer concerning himself with selling. He becomes in many cases practically an employee of the merchant-retailer, who provides the stock and bears the risk. The merchant takes the finished goods from the producer and sells them to the consumer.

Steadily the market widens until we find a national market. The merchant is no longer a single intermediary between the producer and the consumer. The merchant who takes the goods from the producer disposes of them to retail merchants who in turn distribute them to the consumer. After a long period, we find the producers gradually strengthening their financial position, and freeing themselves from the control of a single merchant. They become merchant-producers. They assume the burden of production, and dispose of the product to various wholesalers who in turn sell to retailers, and they to the consumers. As a world market appears, the producer disposes of a part of his product to the export merchant.

In the early days of the factory system, shown in Chart V, we find that the producers have lost their character as merchants and are devoting themselves to the problems of production. The pressure on production has continued, and with the increasing intricacy of industry producers have found it necessary to concentrate their attention on production. The selling agent appears as a link in the chain of distribution to relieve the producer of the task of selling his product. The selling agent undertakes to sell the entire output of the producer, distributes it among wholesalers, who in turn distribute it to retailers, and the retailers to the consuming public.

This may be termed the orthodox type in distribution, a type almost universal in the early decades of the nineteenth century, and still common, as in the textile industry in New England.

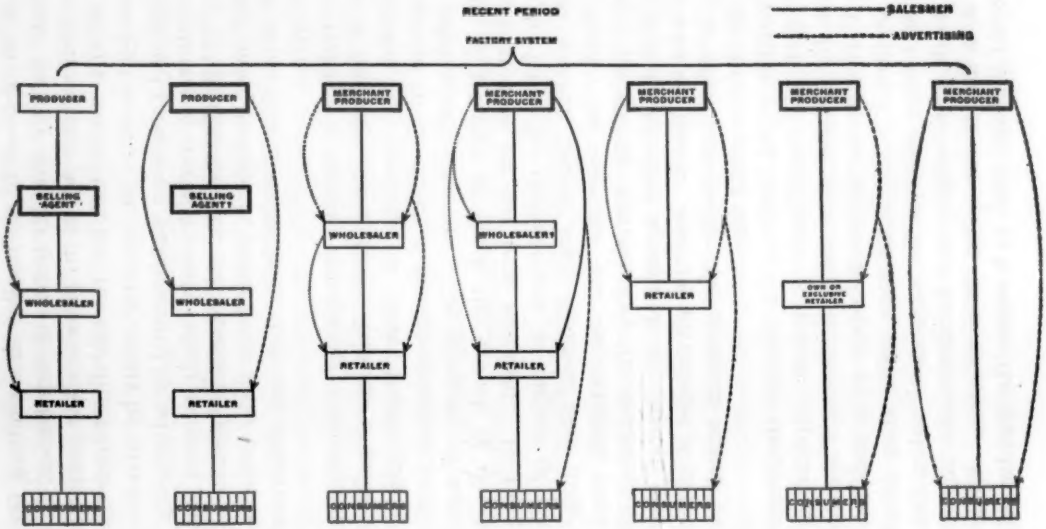
Just as the long period of development from a system of barter economy to the early decades of the factory system showed a continuous tendency for increase in the number of middlemen intervening between the producer and the consumer, so recent years have shown a growing tendency to decrease the number of successive steps in distribution. The tendency is apparent in nearly every industry and has been clearly marked in recent years.

Under the orthodox type of distribution, with numerous middlemen intervening between the producer and the consumer, the producer is in a position of disadvantage. The fixed charges under which he operates render it necessary that he operate continuously. The outlet for his goods, however, is controlled by middlemen. Hence the middleman is able to exert pressure upon the producer and force a narrowing of his margin of profit. To free themselves from this pressure, the stronger merchant-producers seek to go around the immediate middlemen, thus decreasing the number of steps in the system of distribution.

Chart V is an attempt to show diagrammatically the development of this tendency to decrease the number of successive middlemen. By the use of salesmen going directly to the wholesaler and by advertising directed to the retailer the producer has displaced the selling agent in many cases. Sometimes the advertising is directed not only to the retailers but also to the wholesalers. To strengthen still farther his position the producer will often use advertising directed to the consumer to build up a demand for his product. This involves the necessity for a product differentiated by trade mark, brand, or trade name. When the producer thus directly builds up a demand among consumers, he often takes the further step of

CHART V

MODERN TENDENCY TO REDUCE NUMBER OF SUCCESSIVE MIDDLEMEN.



sending his salesmen to the retailer, thus omitting the wholesaler entirely from his system of distribution.

The most extreme step in the process is the complete elimination of middlemen, and the sale direct from the merchant-producer to the consumer, either by advertising alone or by salesmen supplemented by advertising. Manufacturers of specialties have largely adopted this scheme of distribution and the enormous growth of the mail order business in recent years gives evidence that in some lines of distribution there are economies in this system.

The tendency to decrease the number of middlemen is one of the most characteristic features of modern distribution. It promises to show much greater development in the future if present economic conditions substantially continue. The attempts of associations of retailers to check the growth of direct selling have thus far not been successful. In their desire to force the manufacturer to dispose of his product through regular trade channels they sometimes invoke the boycott. But our common state statutes, prohibiting combinations in restraint of trade, prevent effective agreements to boycott producers who sell direct. And the advantages of direct selling in some lines render the producer willing to incur the disfavor of the trade.

It should be noted, however, that changed conditions might give the middleman increased importance. Suppose, for instance, that the protective tariff system of the United States were to be swept away and free trade instituted. The middleman could then draw upon the foreign producer for supplies of unbranded staple goods, which might serve to increase his importance as a link in our system of distribution. While this would perhaps tend to increase the number of

successive middlemen in some lines, it is probable that when the foreign producer in turn was subjected to pressure by the middleman, he, too, would tend to go around him and deal directly with the consumer.

Analysis of the Functions of the Middleman

To understand what seems to be a present tendency to go around the middleman as well as to consider the problem of the merchant-producer with reference to the use of middlemen in distribution, it is necessary to analyze the functions performed by the middleman. Roughly the general functions may be listed as follows:

1. Sharing the risk.
2. Transporting the goods.
3. Financing the operations.
4. Selling (communication of ideas about the goods).
5. Assembling, assorting, and re-shipping.

These functions were at first taken over by areas; that is, each successive middleman in the series took over a part of each function. Each took the risk of destruction of the goods while he held title. Each took the risk of credit losses. Each took a share in the transportation of the goods along the route from the producer's stock room to the hands of the consumers. Each took a part in financing the entire operation. Each had a part in the selling, disposing of the goods he purchased to succeeding middlemen and finally to the consumer. And each finally took a part in assembling, assorting, and re-shipping the goods to make them physically available to the consumer.

But at a relatively early date a taking over of these functions by kind instead of by area appeared. Today

we have what may be termed functional middlemen in the insurance companies, direct transportation companies, and banks.

The insurance company is in a real sense a middleman in distribution. When it insures the producer against loss of goods by fire, against credit losses, and the like, it is taking over the function of risk formerly shared by successive middlemen. Today the insurance company will assume practically the entire element of risk. It is possible, for instance, for a large department store to insure against unseasonable holiday weather. The insurance company differs from the ordinary middleman in that it takes over one function as such rather than portions of a number of functions.

So improvements in direct transportation have enabled the producer to turn to a functional middleman to convey the goods to the consumer. The transportation companies and the express companies are in a true sense middlemen in distribution, tho they perform but one of the functions formerly shared by the successive middlemen who took over functions by area. The physical conveyance of the goods to the consumer was formerly one of the most important functions performed by a series of middlemen. Hence every improvement in the agencies of direct transportation has tended to modify existing systems of distribution. It is this fact that gives enormous importance to the projected establishment of a parcels post. The innovation will, of necessity, carry with it radical readjustments in our present system of distribution.

So the function of financing the operations has largely been taken from the regular middleman. In former times the middleman took his part in the burden of finance in addition to his other functions. It is true today in the textile industry in New England that the

selling agent is as much a banker as a mere agency for the sale of the goods. This is accomplished, however, by the selling agent endorsing the commercial paper of the producer, giving a two name paper acceptable by savings banks in that region, and hence making possible a lower rate of interest.

In most industries today the bank, as a functional middleman, cares for the element of finance in the operations of distribution. By advancing on goods and on commercial paper, it largely absorbs the function of finance in distribution. Legislation providing for an asset currency based on commercial paper might considerably widen the range of the banks' activity in the commercial field.

Another development has lessened the dependence of the producer upon the middleman for financial assistance. The application of the corporate form to industrial organization has made it possible to draw together larger bodies of operating capital and hence to place the producer in a stronger financial position.

As a result of the development of functional middlemen, ready to take over the functions of sharing the risk, transporting the goods, and financing the operations, the importance of the middleman for these functions has diminished. There remain the function of selling (the communication of ideas about the goods) and the function of assembling, assorting, and re-shipping. It is as to these functions that the middleman is of most importance today.

Under the orthodox type of distribution which we have considered above, the producer is not in any sense a merchant. The selling agent takes upon himself the initial distribution of the entire output. He sells the goods to the wholesaler. The basis of the sale is that the wholesaler can dispose of the goods at a profit to

the retailer. The wholesaler in turn sells the goods to the retailer. Again the inducement to purchase is not primarily quality or service but the opportunity to resell at a profit to the actual consumer. Only when the retailer comes to sell to the consumer does stress fall upon quality and service, as the inducement to the sale. Hence the ideas to be conveyed to the prospective purchaser to create in him a demand for the goods vary at different steps in the complicated process of distribution, because of the different points of view of those who buy for re-sale and those who buy for consumption. Price and saleability are the all important factors to the middleman; quality and service are as important to the consumer as price.

The tendency of the orthodox system of distribution of unbranded commodities is to turn the energies of the producer primarily toward lowering the cost of production and hence the price which he is able to offer the middleman. The influence of satisfaction or dissatisfaction on the part of the consumer comes to him only indirectly through a chain of middlemen. Moreover, where the goods are undifferentiated by trade mark or trade name, their identity is often completely lost in the successive stages of distribution. Even the retailer in many cases concerns himself rather with saleability than with ultimate satisfaction to the consumer. Hence, only marked defects in quality are likely to be brought to the attention of the producer. Thus the producer loses the touch with the consumer which will assist him to make improvements in quality and service in his goods. His attention is not forced upon those elements in the commodities which he manufactures. So under the orthodox type of distribution of unbranded commodities the standard of the producer tends to become saleability rather than satisfaction to the consumer.

Suppose, however, the producer does give conscious attention to elements of quality and service in his goods which render them more desirable from the standpoint of the ultimate consumer than other goods of like nature. Before the knowledge of these superior points reaches the consumer it must pass through the distorting medium of a chain of middlemen, who are not, for the most part, primarily interested in quality or service and no one of whom ordinarily gives undivided attention to the single commodity. The ideas that the retailer must communicate to the consumer to create in him a desire for the commodity are not the ideas which the wholesaler conveyed to the retailer to induce him to purchase.

Hence a producer who has added to his goods special advantages in quality or service finds it difficult to convey to the consumer through a chain of middlemen the precise ideas about those advantages that will lead the consumer to demand his goods in preference to those of another.

These considerations render the increasing communication of ideas about the goods by the producer directly to the consumer an improvement of great social significance in our scheme of distribution. The producer is forced to study the consumer's wants and to adjust his product to them. He can no longer devote his attention exclusively to cost. He realizes that the consumer's satisfaction depends on the quality of the goods and the service that they render. These become to him considerations as important as that of cost. Moreover, when he works out in his product some improvement in quality or service which more adequately adapts the commodity to the wants of the consumer, he is able to convey to the consumer precise and accurate knowledge of these improvements and to

reap in increased demand for his product the reward for his efforts. Direct selling means, of necessity, a better adjustment of production to the needs of the consumer. Goods are being made to satisfy rather than to sell.

Obviously direct selling depends on a differentiation of commodities. The producer can effectively communicate ideas about his goods directly to the consumer only when the consumer is able to identify the goods. Where the physical distribution is through retail stores, the goods must be distinguished from other goods of like nature by trade mark, brand, or trade name, or the direct selling efforts of the producer are wasted.

The advantages of direct communication of ideas about the goods by the producer to the consumer as just outlined coöperate with the desire of the producer to escape pressure exerted by the middleman. As a result we find in the past half century and especially in the past decade a rapid adoption by producers of agencies for direct communication of ideas about the goods to the consumer. This means that another function formerly divided among middlemen is being taken over as a function. The newspapers, periodicals, and other advertising agencies may hence be termed functional middlemen, as were the insurance companies, the transportation companies, and the banks. And with the rise in importance of those functional middlemen the position of the old type of middleman is again weakened.

We have still to discuss the function of assembling, assorting, and re-shipping. This function is that which renders the goods physically available so that an aroused demand can be gratified. Here the middleman retains, for the most part, his importance. To

be sure we find direct shipment from producer to consumer steadily increasing. This is to be expected as a consequence of the direct communication of ideas about the goods by the producer to the consumer. But in the more important lines today the consumer still depends on the retail store for the supply of the goods for which a demand has been stimulated and the retail store in general turns for its supply to the wholesaler.

The problem of the distributer is two-fold: (1) to arouse a maximum of demand, and (2) to supply that demand with a minimum of leakage. The second phase of the problem involves the elements of time, convenience, and service. If the demand which has been aroused among consumers is to be fully utilized, it must be made possible for them to obtain the goods promptly when the demand arises. It must be convenient for them to obtain the goods. And in many cases, certain collateral services such as instruction, demonstration, and repairs must be given. It is here that the retailing middleman still retains his importance in most lines. If, when a conscious demand has been raised for a certain food product by the direct communication of ideas about the goods by the producer to the consumer, the latter is unable to find the product at a convenient grocery store, the aroused demand is likely to be ineffective. Hence the producer will often continue to distribute his product through the regular trade channels after taking over the selling function by directly communicating ideas about the goods to the consumer. Distribution by mail order and direct shipment by the producer have thus far proven applicable only to certain commodities and in reaching certain sections and classes. The middleman is a social necessity.

When a producer begins to communicate ideas about goods directly to the consumer to arouse a demand, it is apparent that the middleman is performing only a part of the functions he previously performed. On strict economic grounds the margin of profit of the middleman should be reduced in proportion to his reduced functions.

As compensation for this reduced margin of profit on each sale, the middleman obtains a rapidity of turnover due to the selling efforts of the merchant-producer. But the middleman is often slow to see this compensating feature. He usually resists any attempt to reduce his discounts because the producer has taken over the selling function. If his compensation per sale is reduced he may refuse to handle the article. It is fair to say, however, that many progressive retailers are appreciating the possibilities of more rapid turnover of stock and are adjusting themselves to the changed conditions.

Now if the producer takes over the selling function and does not reduce the discounts allowed the middleman, the middleman is being paid for a function he no longer exercises. And ultimately this must come out of the pockets of the consumer. He is compelled to pay twice over for the exercise of a single function.

The opposition of middlemen to reduced compensation upon reduction in their functions presents a difficult problem to the producer. Often the producer postpones taking over the function of selling by direct communication of ideas to the consumer because he sees that he must continue to allow the middleman compensation for that function if he is to continue to use the middleman for the physical distribution of the goods. Sometimes the producer is forced to establish branch stores and so eliminate all middlemen from

his system of distribution. This, however, is generally possible only in large centers of population and applicable only to certain classes of goods. The system of distribution through branch stores is illustrated in its application by certain large producers of trade-marked shoes.

It is, however, feasible in many lines of trade-marked goods to take over the assorting, assembling, and re-shipping function of the wholesaler rather than to continue to compensate him for the selling function no longer performed. For example, one large paint manufacturer, who stimulates a demand for his branded paints and varnishes largely by direct communication of ideas about the goods to the consumer and to the retail paint dealer, found it desirable to drop out the wholesaler from his scheme of distribution. He finds in branch houses certain marked advantages. (1) He is able to obtain the entire time of trained men, devoted solely to the handling of his products. (2) He obtains a direct contact with the retail dealer, who, he finds, prefers on the whole to buy directly from the manufacturer. (3) He is enabled to carry larger and better assorted stocks than the wholesaler would be willing to carry. (4) In his experience the credit losses are less when the wholesaler is eliminated. (5) He obtains better control of general policy and prices. The larger capital required for a system of branch houses is an objection of decreasing importance owing to the rapid increase in the available capital fund and its greater fluidity. And the increased need of managerial ability is being met by improved systems of training men for managerial responsibilities.

This rather lengthly analysis of the position and functions of the middleman in distribution is still incomplete. Factors not of an economic character enter. The

business man seldom faces a problem on purely economic grounds. There is always a human element to be considered, arising from the character of transactions as they exist in actual commercial life. One does not buy of a dealer solely upon narrow economic grounds. Social and personal considerations play their part. Hence, when the business man considers the position of the middleman in his own scheme of distribution, his problem is complex. Its solution is likely to be found in the rise of a class of efficient and progressive middlemen who take advantage of the producer's selling efforts in more rapid turnover of stock and provide the necessary physical distribution of the goods at a reduced percentage of profit on the unit sale with an increased annual profit.

The Producer's Salesman as an Agency in Distribution

A less detailed analysis than was necessary in the case of the middleman will be required for the salesman. The primary function for which salesmen are used is the communication of ideas about the goods to the prospective purchaser; that is, the selling function.

The salesman, in the sense of a man sent to prospective purchasers, generally sells from sample. In some few cases the sale may be in bulk, the salesman showing the prospective purchaser the actual goods to be purchased. And as has been suggested, the salesman may sell entirely by description, merely showing the prospective purchaser pictures of the goods, as in selling from catalogue.

When the producer finds it desirable to go around a middleman and to sell directly to a subsequent middleman or to the consumer, he may use for the selling

function either his own salesmen or advertising, or the two in combination.

When one analyzes the salesman as an agency for sale by description in contrast with advertising, direct or general, he must take into account the human element again. Advertising has the obvious advantage that you can convey exactly the idea you wish to convey in the form you wish to convey it. It lacks, however, the personality and the timeliness of the salesman's visit; it lacks adaptability, the opportunity to use the mood of the customer and all the various human factors that make the salesman effective.

More than this, when the salesman has aroused in the prospective purchaser a demand for the goods in question, he is on the ground to close the sale at once. In the case of advertising, the demand aroused must, in general, be strong enough to lead the prospective purchaser to go to some trouble before he obtains the actual goods. Hence a less intensive demand may be more immediately effective in the case of the salesman than when advertising is concerned.

It should here be emphasized that the analogy between direct salesmen and advertising is very close. Each agency is largely used to enable the producer to take over one function of the middleman, that is, the selling function. And in each case the root idea is the same. The producer seeks to communicate to the prospective purchaser through one or the other agency, or a combination of the two, such ideas about the goods as will create a conscious demand for them. The direct salesman and advertising are different modes of accomplishing the same end.

Advertising as an Agency in Distribution

Advertising in the modern commercial sense is of comparatively recent development. Only in the middle of the nineteenth century did it commence to be of real importance in the commercial world. And as in its early extensive use that for the sale of proprietary medicines of doubtful value predominated, it was at first somewhat in bad repute as an agency in distribution. This notion lingers among many economists, who are satisfied to condemn casually advertising under the name "puffing," and who fail fairly to analyze its position as an agency in our scheme of distribution.

That there are evils and abuses in connection with advertising today may be frankly admitted. It is a new economic agency, and ignorance of its true function causes wasteful use. Moreover it lends itself to conscious misuse. So the factory system carried with it evils which were far greater a century ago than today. And just as the factory system, by gathering together large bodies of workers, drew attention to evils which existed unnoticed under the domestic system of manufacture, so advertising tends to bring into the lime-light of publicity certain evils which existed as well in sale through other channels. But these are rather undesirable and non-essential incidents than anything fundamental in the thing itself. The evils must be recognized and combatted, but should not cloud the fact that advertising is today an element of tremendous importance in our economic organization. The steady and remarkable increase in advertising evidences its efficiency as a selling force. In the United States we are expending annually upon advertising, in its inclusive sense, not less than

a billion dollars. This is a cold economic fact which renders advertising worthy of serious analysis.

Advertising is a necessary consequence of sale by description. It has been pointed out that so long as the prevailing code of commercial ethics made sale in bulk the only practical method, the middleman was an indispensable selling agency. As business morals bettered and manufacturing methods improved so that a standardized product could be turned out, sale by sample appeared. Then it became possible for the producer to send his own salesmen with a sample to the prospective purchaser instead of being dependent solely upon the selling efforts of a middleman. And then, when sale by description appeared, with an even higher ethical code and a higher level of general intelligence, a third selling agency became possible. In advertising, as in selling through salesmen, the producer communicates ideas about the goods to the prospective purchaser to raise in him a demand for the goods. While the purchaser demanded that he see the actual goods before purchasing, sale by advertising was impracticable. While he still required to be shown a sample of the goods, advertising was not in most cases feasible. But now that the general average of intelligence enables the prospective purchaser to gain an idea of the goods without seeing them and without seeing a sample, and now that the prevailing code of business ethics is such that the prospective buyer feels that he may rely upon the description given him, advertising becomes in many lines the most economical agency for the exercise of the selling function. Even where the actual sale is made by salesmen from sample, advertising is used as a supplementary agency to build up a demand which the salesman crystallizes. And sale by advertising alone may be

applied today even where the purchaser demands to see the goods before concluding the purchase, by sending the goods to him on approval.

Not only is the modern development of advertising dependent upon the possibility of sale by description, but it also depends upon the increasing differentiation of commodities by trade marks, brands, and trade names. As before suggested, the producer cannot profitably convey to the consumer ideas about a certain food product which will build up a demand for that product, unless the consumer is able to identify the particular product when he goes into the grocery store to purchase it.

Advertising, then, may properly be regarded either as a substitute for middlemen and salesmen or as auxiliary to them in the exercise of the selling function. Owing to the rise of sale by description and the increasing differentiation of commodities, it tends to displace in many lines of distribution these other agencies in whole or part as a more economical and efficient means of communicating with the consumer.

Advertising, in the sense here used, is to be defined as the communication to possible purchasers by written or printed symbols of ideas about the goods, designed to create a demand for the goods. In this broad sense it includes not only selling letters and circulars, but newspaper and periodical advertising, bill-boards and window cards, electric signs, street-car advertising, catalogs, and all the varied forms of modern commercial publicity. A rough classification is made between general and direct advertising. General advertising includes newspaper and magazine advertising, bill-boards, electric signs, street-car advertising and the like, aimed at the general public or some section of it. Direct advertising is used in

reference to the sending of selling letters, circulars, or catalogs to the persons whose names appear on a mailing list and to reach whom the material sent is specially adapted. This classification is of some importance in discussing advertising as an agency in distribution.

We cannot here attempt an adequate discussion of modern advertising in its varied phases. And it is perhaps not necessary, so much is it today forced upon the attention of each of us. To realize the machinery now provided for the direct communication of ideas about goods, one has but to consider that a single publishing company today reaches through two magazines about three and three-quarters million families; that there were in this country in 1911, according to the *Statistical Abstract*, 22,806 newspapers and periodicals. A fair measure of the development of advertising in recent years is found in the rapid progress of invention to facilitate advertising, — photography, the halftone process of reproducing photographs and drawings, the three-color process for such reproduction, the cheapening and perfecting of papers, inks, and printing, and better reproducing machinery.

Advertising is now being extended to fields where its use not many years ago was undreamed of. Ten years ago an advertising man would have said it was impractical to advertise papers; today enormous sums are expended on general advertising of papers for writing and printing. Advertising is even being used in fields other than commercial distribution. The railroads annually buy large quantities of newspaper space in which they present facts intended to build up a public opinion favorable to the railroads as a check on adverse legislation. And advertising by the railroads to secure passenger and freight traffic has reached enormous proportions.

It is necessary to include in this hasty and incomplete analysis of advertising as an agency in distribution a reference to the character of the demand aroused by advertising. Advertising may be said to build up three general classes of demand: (1) expressed conscious demand, (2) unexpressed conscious demand, and (3) subconscious demand.

The three classes may be illustrated by supposing a product for sale by grocers to be advertised in a periodical of large circulation by a double page costing for one insertion $8,000. If as a result of the advertisement 30,000 people go to the grocery and buy the product, 60,000 plan to purchase the product at some future time when such an article is needed, and 100,000 more become open to a further exciting force, such as seeing the product at the grocery and recognizing it as one advertised, then we should call the 30,000 the expressed conscious demand, the 60,000 the unexpressed conscious demand, and the 100,000 the subconscious demand resulting from the advertisement. Expressed conscious demand means present sales; unexpressed conscious demand means future sales; subconscious demand means that the field has been fertilized so that future selling efforts will be more fruitful. Unexpressed conscious demand and subconscious demand are difficult of measure but must always be taken into account in any consideration of the efficiency of advertising as a selling agency.

Purpose of Foregoing Analysis

What has gone before has all been by way of analysis. The general problem of distribution, the present day differentiation of products, the price policies open to the producer, the methods of sale, and the three chief

selling agencies have all been subjected to hasty review. This has been rendered necessary by the fact that neither economists nor business men have previously made such an analysis.

Tho what follows is by way of practical suggestion to the business man, the social significance of the problem must not be forgotten. While a more systematic handling of distribution problems means to the business man business success, a better organization of distribution means to society the prevention of an enormous annual waste. It is not alone that a considerable part of the billion dollars annually expended on advertising is wasted, that expenditures are often unwarranted and ill-directed, and that the distributer often fails to take advantage of the demand aroused by making the goods physically available at the time and place they are wanted, but also that our cumbersome and chaotic system of distribution adds materially to the cost of goods to the consumer. It is to the costly and awkward machinery of distribution that the Tariff Board refers in its *Summary of the Report on the Cotton Schedule*, submitted to the President, March 22, 1912: —

" On account of more costly methods of distribution in this country from producer to consumer, the latter pays a decidedly higher retail price than the European consumer, even in the case of fabrics on which the cost of production and the mill price are as low here as there."

Nor is the social importance of improvements in distribution a matter merely of reducing the cost of products to the consumer. Our ill-organized system of distribution means that the consumer is not able readily and accurately to satisfy his needs. And this unfortunate condition is not inevitable.

While it is true that up to this time the facts of distribution have not been gathered, described, and classified in such a way as fully to indicate tendencies and underlying principles, yet the way is open to a better organization. The business man must apply to the problems of distribution methods of systematic study that have been successful in other fields of human knowledge. There is an increasing need of scientific research methods in business. As business becomes more highly integrated, mere intuition must play a smaller part, and a scientific approach to the problems arising is demanded. And a scientific approach to the problems of distribution is feasible.

The ordinary business man today markets his product by rule of thumb. He gambles on his business instinct. The success or failure of a selling campaign is almost his sole source of knowledge as to whether his business instinct was a safe guide. If his past experience with other commodities has indicated that one agency or another of selling is more efficient, then he will adopt that agency for commodities which he subsequently attempts to market. If he compares the different agencies, it is through the average cost of selling by one or another agency. Thus if he finds over a short period that the average cost of selling a product through middlemen is less than the average cost of selling it through salesmen and advertising, he relies solely upon the former method. He does not wait to analyze the market as a basis for his consideration of the most economical agency. As an advocate of one particular method of selling, he does not always realize that an agency which is most economical for distribution in one section or stratum of the market may not be so in another. And least of all does he systematically test the ideas to be conveyed, and the very forms of expression, that are the basis of his selling efforts.

Analysis of the Market

The business man must first realize the intricacy of the problems he has to solve. He must analyze his market. Enough has been said to indicate the complexity of the market problem. The business man faces a body of possible purchasers, widely distributed geographically, and showing wide extremes of purchasing power and felt needs. The effective demand of the individual consumer depends not alone upon his purchasing power but also upon his needs, conscious or latent, depending upon his education, character, habits, and economic and social environment. The market, therefore, splits up into economic and social strata, as well as into geographic sections.

The distributer cannot disregard the geographic distribution of the consuming public. He may be able to sell profitably by salesmen where the population is dense, while such method of sale would be unprofitable in a region where there is a sparse population. If he bases a judgment upon the average cost of selling by salesmen for the whole market, he may well go wrong, since the average might show that the use of such an agency was on the whole profitable, while yet in some sections entering into the average the use of salesmen was actually unprofitable. Again, it might be economical for the distributer to establish his own branch stores in the denser urban centers, while in the sparsely populated regions he could most profitably distribute his product through the regular channels.

If, then, a sound system of distribution is to be established, the business man must realize that each distinct geographic section is a separate problem. The whole market breaks up into differing regions.

Equally important is a realization of what may be

termed the market contour. The market, for the purposes of the distributer, is not a level plain. It is composed of differing economic and social strata. Seldom does the ordinary business man appreciate the market contour in reference to his product. Yet obviously the success of the producers of trade-marked hats depends upon a realization of this element of market contour. The distributer of a staple hat at $3.00 appeals to different economic and social strata, faces different considerations, and finds different selling methods necessary, as compared with distributers selling a $5.00 trade-marked hat, or those distributers selling $4.00 or $6.00 trade-marked hats. Differences in economic and social strata to be reached are as important as differences in geographic location and density, if a sound system of distribution is to be worked out.

Take the distributer who seeks to map out a selling campaign for a Catholic publication. It is essential that he take into account not merely the geographic distribution of the Catholic population in the United States, the regions where it is relatively dense, and the regions where it constitutes a small element in the population, but also he must take into account the distribution of that population through the economic strata of society. A method of distribution successful in New Orleans, where the Catholic population is dense and spread through all economic strata of society, might well fail if applied in Maine, where the Catholic population is relatively sparse and found mostly in the lower economic strata.

A careful analysis of his market, then, by areas and by strata, is the first task of the modern distributer.

Choice of Agencies in Distribution

Nor does the merchant-producer ordinarily realize how intricate is his problem as to the agency or combination of agencies that will be most efficient in reaching his market. As has been suggested above, the business man often adopts one method and becomes an advocate of it, disregarding entirely other methods. While the method adopted may be more efficient than any other *single* method, it is apparent that a method which is relatively efficient in reaching one area may be inferior to another method in reaching another area. And so a system of distribution which has proven very effective in reaching one economic stratum may be relatively inefficient when employed to reach a different economic stratum in society.

The problem, then, of working out the most effective combination of agencies is a most complicated one. Each distinct area and economic stratum must be treated as a separate problem, and, moreover, the economic generalizations embodied in the Law of Diminishing Returns must be taken into account in choosing that combination of selling agencies which will give, in the aggregate, the most efficient organization of the market.

Thus the distributer may find as he extends his operations in his immediate territory, geographically, that his selling cost steadily decreases, but that when he further extends his market the selling cost increases. He may find that in more distant areas selling by salesmen ceases to be profitable, and there he will perhaps establish a more economical system of selling by a combination of salesmen and circular letters. That is, he may reduce the number of visits by salesmen by one-half, and supplement their efforts by a

series of circular letters or more personal correspondence. In even more distant areas, it may be necessary to eliminate the salesmen entirely and to sell only by direct advertising.

Perhaps enough has been said above, in analyzing the functions of the middleman and the extent to which the rise of functional middlemen has made alternative agencies of distribution possible, to free us from the necessity of here pointing out at length how complicated is the problem presented when the business man balances distribution through middlemen against direct selling through salesmen and advertising.

Attention must be called, however, to considerations that enter when one compares the use of salesmen with the use of different forms of advertising. The business man will often judge between different selling agencies solely upon the basis of the direct return over a short period. In discussing advertising we spoke of three classes of demand aroused by selling effort: (1) expressed conscious demand, (2) unexpressed conscious demand, and (3) subconscious demand. The direct and immediate return from selling efforts depends solely on expressed conscious demand. But the business man must take into account the unexpressed conscious demand and the subconscious demand. Suppose a smoking tobacco is advertised. A man notices the advertisement, reads it, and decides that at some future time he will try it, and perhaps months later does so. This is not reflected in the direct immediate returns, yet clearly is a result to be taken into account. Or suppose a man merely notices the advertisement. At a later date when purchasing tobacco, he is shown the advertised brand with other brands. The advertised brand being vaguely familiar to him from the advertisement, he purchases it in preference

to the others. Here, too, the aroused demand would be of a degree not reflected in direct immediate returns, yet of value to the distributer.

It is obvious, then, that if one were balancing the advantages of selling through salesmen as against selling through advertising in whole or part, he should consider not only the expressed conscious demand reflected in the direct immediate returns but also the lesser degrees of demand which, while not immediately effective, tend to render subsequent selling easier.

Thus a salesman might make fifty calls at an expense of $100, and ten sales might result from his efforts. Or for the same $100, 5,000 pieces of direct advertising might be mailed, resulting perhaps in only eight sales. Or, perhaps, if the same $100 were used for the insertion of a page advertisement in 100,000 of the circulation of a standard magazine, only six sales would result. Now it is apparent that judging by the direct results, the salesman is the most efficient agency of distribution, the direct advertising next, and the magazine advertising least efficient. But the distributer must bear in mind that there are grades of demand which do not become effective immediately, and must take into account that while the salesman made ten sales he had only forty opportunities to create these lesser grades of demand, while the direct advertising gave 4,992 opportunities for the creation of demand falling short of expression, and the magazine advertising, perhaps, 49,994 such opportunities, assuming for our present purpose that the advertisement was seen in one half the copies by one person. This is not an improbable supposition as each copy of a magazine is usually read by several persons.

A sound selling policy, then, must be built up on a careful analysis of the market in areas and strata,

and upon a detailed study of the proper agency or combination of agencies to reach each area and stratum, taking into account always the economic generalizations expressed in the Law of Diminishing Returns. It must also take into account not only the direct results obtained from the use of one or the other agency over a short period, but also the less measurable results represented by the unexpressed conscious demand and subconscious demand, which go to aid future selling campaigns.

Laboratory Study of Distribution

All this tends rather to give a general sense of direction than to serve as a practical and tangible method of handling a specific problem of distribution. A clear grasp of the problem through a careful analysis is the first step in solving difficulties. To suggest any cure-all or even any panacea for the existing maladjustments in distribution, even were it possible, is not the purpose of this paper. The very complications revealed by analysis indicate the inadequacy of any single remedy. But it is possible to face the problem of remedy as well as of diagnosis in a scientific spirit, — to introduce what may be termed the "laboratory method."

The crux of the distribution problem is the proper exercise of the selling function. The business man must convey to possible purchasers through one agency or another such ideas about the product as will create a maximum demand for it. This is the fundamental aim, whatever the agency employed. Hence this is the point where a scientific study of distribution must first be applied. How is the business man to determine what ideas are to be conveyed to the possible

purchaser and what form of expression is best adapted to such conveyance?

Here, as elsewhere in distribution, the ordinary business man is today working by rule of thumb. He *guesses* at the suitable ideas and forms of expression, and gambles on his guess. On the basis of his *a priori* selection of ideas fitted to build up a demand for his product and of a form of expression suited to effectively convey the ideas, he invests tens, even hundreds, of thousands of dollars in a selling campaign.

The more able business men, to be sure, seek to determine those facts about their goods that will attract the attention of the possible purchaser and awaken in him the desired reaction, that is, a demand for the article. They study in a general way the points of superiority in quality and service possessed by their products as compared with other goods of like kind.

They also seek guides as to the form in which the ideas should be conveyed, in the general principles of style, all based on the fundamental notion of conserving the prospective purchaser's mental energy by cutting down the friction of communication. They know, for instance, that they should use short familiar words expressing their exact shade of meaning; that they should give preference to figurative language; that they should suggest a concrete image only after the materials of which it is to be made are conveyed; that they should avoid abstraction and generalization where possible; that when they are suggesting the reaction desired their language should become quick, sharp, and compelling.

These things the more efficient business men know and apply. But all this is *a priori*. The need is for a method of practical test that will enable us to try out

selling ideas and forms of expression, under laboratory conditions, as it were, before the investment of thousands and hundreds of thousands of dollars is staked on the success of the selling campaign.

Mention has been made of the annual expenditure of not less than a billion dollars in advertising. Unquestionably an extremely large percentage of this is wasted. This means not merely individual loss, but social loss. It is a diversion of capital and productive energy into unprofitable channels.

The causes of this waste are numerous. The commodity in question may be one not possessing those elements of quality and service which constitute the basis for a demand on the part of the consuming public. If the goods advertised are not adapted to satisfy a need, conscious or subconscious, of consumers, the advertising cannot be effective. Attempting to sell a thing that nobody needs is wasted effort.

Again, the medium used for the communication of the ideas about the goods may not be one that reaches the particular economic or social stratum in which possible purchasers of the commodity lie. Hence the ideas fail to create a demand because they do not reach those in whom a latent need for the commodity exists.

Another important cause of advertising waste is in the failure to take advantage of aroused demand. The distributer often fails to give proper attention to the matter of the mechanical distribution of the goods. There results a considerable leakage in demand from the inability of persons in whom a demand has been created to obtain the goods at the time when desired.

But the great cause of waste is probably the fact that the ideas about the goods, or the form in which those ideas are conveyed to possible purchasers,

proves ill-adapted to secure the desired reaction, and thus to create in the consumer an effective demand.

If we can apply to this pressing problem of advertising waste methods of study which have proven efficient in other fields, the gain is clear. The engineer does not choose material for a bridge by building a bridge of the material and waiting to see whether it stands. He first tests the material in the laboratory. That is what the business man must do.

The statistician turns in his problems to the law of averages. He is familiar with what are termed mass phenomena. He knows that he can learn something of the average height of a body of people by studying the heights in a group of a few thousands of people drawn at random from the larger body. Provided that the smaller group is not so selected as to prevent it being typical of the larger body, and provided the group is large enough to render the law of averages applicable, the statistician knows when he has determined the average height of the smaller group that it will roughly coincide with the average height of the larger group.

This method of study can be applied by the business man in testing the ideas and forms of expression to be used in a selling campaign. In direct advertising, the mailing of selling letters, circulars, or catalogs to prospective purchasers to draw from them an order for goods as evidence of an awakened demand, you have a stimulus and response adapted to direct statistical measurement. The number of responses per thousand communications can be determined. Here is the agency that the business man can employ in testing, under what are equivalent to laboratory conditions, the ideas and forms of expression that seem to him best adapted to awaken a demand for his product.

Suppose the producer of a food product is planning a campaign to reach, not the consumer, but the grocers of the country. Now the whole body of dealers, large and small, handling groceries numbers something like 250,000. Let the distributer, after working out a set of ideas and forms of expression which seem to him likely to be effective in arousing the desired demand, test this material by mailing it to say 1,000 grocers. The group selected must be large enough to give typical results and it must not be so selected as to be distinct in character from the whole body of grocers. Granting these elements, the distributer can determine the number of responses from the 1,000 grocers to whom the communication was sent, and can estimate from that result the average response per thousand of communications that would have been obtained if the same ideas in the same form of expression had been conveyed to the whole body of 250,000 dealers in groceries in the country. He can then test by means of direct mailing to another group of 1,000, a varying set of ideas or varying form of expression. And so on with another modification of the selling material. Thus it will be possible to determine what ideas, in what arrangement, and in what form of expression, are most effective to arouse the desired demand.

That the plan suggested is practical is indicated by the results of such an intensive study presented in Table I. Here are shown the results of " tests " and the results of complete mailings. The tests here covered only one stratum of society, a mailing list of bankers being used. The purpose of the selling material mailed was to obtain orders for certain publications. Various forms of " copy " were tested by mailing, usually to 500 names on the list. Where the return on any test exceeded the minimum standard of twenty

BANKERS' TESTS

MINIMUM STANDARD = 20 PER M.

Material Mailed	Tests				Mailings			
	Date	No. of pieces mailed	Total orders received	No. per M.	Date	No. of pieces mailed	Total orders received	No. per M.
	1909				1909			
A^1	3/30	500	3	6				
A^2	3/30	500	5	10				
B^1	8/13	500	6	12				
B^2	9/13	500	3	6				
C^1	9/15	500	4	8				
C^2	9/15	500	3	6				
D^1	9/15	453	6	25	9/27	19,943	360	18
D^2	9/15	500	18					
E	9/16	500	7	14				
F^1	9/21	500	24	36	11/23	16,511	589	35
F^2	9/21	500	12					
G	10/18	1,000	30	30	11/28	21,790	643	29.5
					1910			
H	11/16	500	11	22	1/24	6,554	165	24
					1/24	16,039	390	
	1910							
I	4/11	500	12	24	5/5	6,810	145	25
	4/11	500	12		5/4	12,154	336	

Note. — Where the same letter appears with different exponents under "material mailed" it indicates that on the test mailing results were kept separately for the same material mailed to two small groups.

orders per thousand communications the material was mailed to the complete list. In only one case did the complete mailing fail to show an average return per thousand communications substantially the same as that derived from the test mailing. In the case of Test D^1, mailed September 15, 1909, the return is clearly out of proportion to the results from the mailing. The same material mailed on the same date, however (Test D^2), gives for a similar small group a return much closer to the results obtained from the final mailing.

When a minimum standard as low as twenty is used, and the test group numbers only 500, there is danger that the average will be disturbed as by one individual sending in several orders. The larger the test group the more exact an index will it give as to the results which will be obtained from a complete mailing.

This method of studying ideas and forms of expression in direct advertising would be important, even tho its usefulness did not extend beyond direct advertising. It would permit one to guide a widely extended direct advertising campaign by an investigation relatively inexpensive.

But the importance of the method described does not end with direct advertising. Remember that the root idea is the same whatever the agency for selling employed. Selling is accomplished by communicating to the possible purchaser ideas about the goods calculated to build up in him a demand for the goods. These ideas may be communicated through middlemen, salesmen, general advertising or direct advertising. Since the ideas are the same, whatever the agency for communication, the business man can determine in his direct selling laboratory, what ideas and in what combination are the most effective selling material. He can then carry over to selling by other agencies the results there obtained.

Suppose an extensive periodical campaign is under consideration. The distributer contemplates spending perhaps hundreds of thousands of dollars upon advertising in certain periodicals. What can the "distribution laboratory" do to determine the ideas to be conveyed and the forms of expression to be used to create the desired demand? Now the circulation of a periodical to be used may run into the hundreds of thousands or even into the millions. The business

man wishes to test the response that will result from the communication to this enormous body of subscribers of certain ideas expressed in certain forms. Not only can he work out the most effective ideas, the most effective arrangement, and the most effective forms of expression through the agency of direct mailing, but he can even test the final " copy " itself, just as it will appear in the periodical, by mailing it directly to relatively small groups. Moreover, he can test the response to it found in differing strata of society. Ideas adapted to build up a demand for a commodity in one economic and social stratum may prove ineffective when dealing with another. The importance of this method lies in the fact that most periodicals circulate within certain fairly well defined economic and social strata. The ideas and forms of expression that are most effective in one periodical hence may be relatively ineffective if used in another that reaches a different stratum.

Equally important is the application of the suggested method of study to selling through salesmen. The more progressive business men today train the salesmen in a certain basic " selling talk." That is, certain ideas, in a certain order, and in certain forms of expression, are impressed upon them as likely to build up a demand for the article on the part of possible purchasers. The basic " selling talk " is not, of course, repeated parrot-like by the salesman, but does serve as a foundation for his talks to possible buyers.

Here again the laboratory idea can be applied. The whole structure of the selling talk can be built up on the ideas, order of arrangement, and forms of expression established as the most efficient in creating demand through the medium of direct advertising. One need but appreciate the fundamental identity of the selling

function, through whatever agency exercised, to realize that the results obtained in experiments in direct advertising can be carried over to selling by salesmen.

Note, too, that the general principles upon which the "testing" method depends, apply when we seek to study the possibilities of the whole market by the intensive cultivation of one section of it. A localized selling campaign, narrow in extent, will give relatively exact data from which the possibilities of a nation-wide campaign of like character may be judged. Obviously, if our law of averages holds good, we may carry over the results obtained in one section to other sections, and hence at small cost guide a widespread campaign.

The exact data that can be obtained through such "testing" methods permit a more scientific consideration of the decreasing returns obtained if one agency is used beyond a certain point. Hence a better combination of agencies is possible, with a view to the greatest aggregate efficiency.

When a business man contemplates putting a new product on the market, a serious problem is the price at which it shall be sold. Take the case of the introduction of a product like the safety razor, at what price is the product to be sold? In such case the business man seeks to determine what price will give him the best net return, all things considered. Now the method of study developed above will permit the business man to determine by actual test the effective demand that can be built up at different price levels in different economic and social strata. Hence he can fix the price on the basis of relatively exact data, rather than on a mere guess.

Again, the laboratory method here suggested lends

itself to a determination of what elements of quality and service in a given product are deemed most essential by the consumer. The effectiveness of the ideas conveyed in building up a demand reflects the intensity of human wants as to the elements of quality and service described. The producer can sound the consumer and can better adapt his product to the consumer's felt needs.

Thus an entire selling campaign can be directed on the basis of what may be termed laboratory study. The empirical methods of the ordinary business man may be supplemented by scientific methods that have proven efficient in other fields.

The above practical suggestions have been directed primarily to the business man struggling with his immediate problems; yet it may be well to emphasize once more the social importance of the suggestions. It is not merely that a large annual waste in advertising can be eliminated. Our whole system of distribution is in chaos. And the chaotic conditions in distribution mean that matter is ill-adjusted in form and place to human wants. Only as systematic and widespread study along the lines indicated is given to the problems of distribution, can we build up an organized body of knowledge as to the facts and principles involved. And only on the basis of an organized body of knowledge about distribution can we hope to work out a more efficient organization of distribution.

And to this end the business man must coöperate with the scientist of the university. Much can be done by the trained student in his laboratory or in his study that will be of practical value in making possible a more efficient organization of distribution. The experimental psychologist can do much to work out general principles that will aid the business man

in solving definite selling problems. The difficulty has been that the laboratory worker does not have brought to his attention the specific problems of the business man.

Similarly, the universities, through investigators trained in economics, can gather and correlate data upon distribution that will be of enormous practical value. They should, through research bureaus, study such problems as the cost of distribution in the various industries at different stages. And gradually a body of organized knowledge of the actual facts of business will arise. It is by development along such lines that future improvements in the system of distribution will be made possible.

Conclusion

Distribution is one of the two great departments of business. Industry is concerned with the application of motion to matter to change its form and place. The change in form we term production; the change in place, distribution. The end in each case is the same: a better adjustment of matter to the wants of man.

For centuries we have been concentrating our attention on production; distribution has been, until of late, a neglected field. Hence distribution offers the most pressing problems of the day.

An attempt has here been made to outline, from the standpoint of the business man, the pressing problems of distribution, and to urge a scientific study, leading to a better organization. That the indicated method of approach is practical has been shown by presenting as an illustration the actual results of one such intensive study. It must be remembered, however, that this is only an example, intended to indicate the point of

view and general method of approach. It does not purport to offer a solution of the intricate problems of distribution.

The aim here is not only to lead business men to turn to their individual problems of distribution with a new point of view and with a new method of study, but also to lead economists to give to much neglected problems the benefit of trained intelligence and scientific methods.

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TUDOR "BOOKS OF RATES": A CHAPTER IN THE HISTORY OF THE ENGLISH CUSTOMS

SUMMARY

Dates of Books of Rates prior to 1558, that usually accepted as the first, 766. — Metropolitan rates (1507–36) precede the national valuations, 768. — Increase of valuations in 1558 and 1610, 769. — The Books contain valuations, not specific duties, except in the case of cloth, 770. — Other contents, 771. — The chief motives for the issue of the earlier Books were the desire for national uniformity and the need for reform of customs frauds, 772. — For the later books not the loss of Calais revenue but the necessity of adjustment to price changes and the increase of indirect taxation, 773.

FROM the sixteenth century to the time of the younger Pitt, the history of the customs revenue of England is closely associated with the successive Books of Rates. But despite the interest of these Books there is little reliable information concerning their origin. The following study, based on the sources, aims to determine the dates of the earlier Books, the nature of their contents, and the reasons for their issue.

The Book of Rates of 1583 explicitly states that the rates, or official valuations for customs purposes, were issued by Queen Mary in the first year of her reign,[1] and the Book of 1604 implies the same.[2] To the authors of these two Books, as to Gilbert,[3] no earlier Rates than Mary's were known. Dowell, writing in 1888, assumes that Mary's were the first; issued,

[1] Bodleian Library, Douce C 70.

[2] R. O., K. R. Customs, 173/3.

[3] Sir Geoffrey Gilbert, A Treatise on the Court of Exchequer, p. 208 (1758).

however, not in the first but in the last year of her reign.[1] This date, 1558, has been generally accepted.[2]

There is good evidence, however, that Mary was not the first sovereign to issue a Book of Rates. And in spite of Gilbert's view,[3] it seems clear that the earliest general Book listing fixed valuations could not have been issued before 1509–10, since the poundage grant of Henry VIII kept the old clause that the merchant's declaration on oath of the value of his goods was to be accepted.[4] The corresponding poundage grant of Mary omits this clause,[5] as does that of Edward VI, inserting the significant phrases, "and so after the rates."[6] Watts, in his *Bibliotheca Britannica*, refers to a Book of Rates of 1550,[7] no copy of which, however, have I found. But there is in the Bodleian Library a Book of Rates clearly dated 1545, and this is a reissue of an earlier Book.[8] At the Record Office, the original order for the issue of the first general Book of Rates is dated 1536.[9] The wording of the general orders accompanying the Book indicates that

[1] A History of Taxation and Taxes in England, I, p. 179: "The old system of rating merchandise for the poundage, upon the value as sworn by the merchant, was superseded by a fixed valuation."

[2] Cunningham, Growth of English Industry and Commerce (4th ed.), vol. i, p. 549. Atton and Holland, The King's Customs (1908), p. 60.

[3] "The Book of Rates seems to be as ancient as the thirty-first of Ed. I for thereby the Merchants agreed to be charged with the Pound Rate according to Value and such a Pound Rate could hardly be well and equally assest without a Book of Rates; since, without such a Book, the Customs would be liable either to the Oath of the Merchant, or the Oppression of the Officer." Treatise, pp. 223, 224.

[4] 1 Henry VIII, c. 20. The exception to this rule is considered below.

[5] 1 Mary, St. 2, c. 18.

[6] 1 Ed. VI, c. 13.

[7] "The Rates of the Custom-House, both inward and outward, newly corrected. London, 1550, 8vo," printed by Nicholas Hyll.

[8] The title of this reads: "The rates of the custome house bothe inward and outward, the difference of measures and weyghts and other commodities very necessarye for all merchantes to knowe newly correctyd and imprynted. An. MDXLV." Printed by Rich. Kele.

[9] R. O., St. P., Henry VIII, vol. 113, fols. 129–140.

this was the first national Book of Rates ever made in England; "None of the Raats of merchandisis in no port within the Reme doth agre one with another at this day."

On the other hand, in the year 1532, there was a petition of foreign merchants concerning official valuation, which elicited the reply that the system had been in vogue over 20 years,[1] in other words, previous to 1512. Another diplomatic document of an earlier date, 1507, implies the existence of such a system.[2] There is also a long paper roll of date 1532,[3] giving the official valuations of goods made in 1507. And the report of the royal commission of 1553 refers to the Book of Rates of the same year, 1507.[4]

The apparent conflict of statements and facts may be explained by the hypothesis that this list of rates was for one port only, not general. The port was probably London, for in the drawing up of the Rates London customs officials were the only officials consulted along with the Merchants Adventurers of London, and the list of rated commodities resembles London's imports, as shown in the customs accounts, more than those of any other port.[5] Furthermore, the evidence

[1] R. O., St. P., Henry VIII, vol. 69, fol. 255b. Schanz, Englische Handelspolitik II, p. 267. The Rates were likewise the subject of foreign negotiations in 1566 (Br. M., Galba, C II, fol. 297). Mary had considered the possibility of foreign objection before issuing her Rates (Br. M., Titus, B IV, fol. 129).

[2] Br. M., Harl., 288, fol. 19; Schanz, II, sec. 115.

[3] Br. M., Add. Ch., 16577, inaccurately catalogued as "Rate of prices of wares for custom due from Merchant Adventurers, 1507, 1532." (Charters and Rolls, Index Locorum, 460.) The preface of this document reads: "A Rate made of the prisys of allmaner off warys by the kyngs counsell and by the advyce [of the] surveyor & cowntrawlers & costemers off the porte of london and the merchants adventerers of the same with other the xv daye of July in the xxii yere of the Rayne of ower Soveragne lorde Kyng Hary the VIIth the same to induer & to contynew forever duryng the kyngs plesure."

[4] Br. M., Add., 30198, fols. 43 ff.

[5] Schanz, tho with little evidence before him, concluded that there was "in all probability for some wares a new rating" under Henry VII, and that this remained "quite unaltered" under Henry VIII. His statement has been ignored by English writers.

from the customs ledgers in the years following 1507 indicates that the London valuations had not been established in the other ports, for their rates differed both from London and each other.[1] We may distinguish, therefore, a period of metropolitan official valuation (1507–1536), preceding that of national valuation when the London rates were made general for the Kingdom, and printed in book form.

When the valuations are compared it is seen that the Tudor Books of Rates fall into two groups. Of the Books issued in 1507, 1532, 1536, 1545, and 1550, the two of 1532 and 1545 (now accessible, one at the British Museum and the other at the Bodleian Library) show that the rates continued unchanged when the London official valuations were made national in 1536. The second group of Books, beginning in 1558,[2] and continuing in 1583, 1586, and 1590, raise the valuations by approximately 75 per cent on the average and keep them without change to the end of Elizabeth's reign. Walsingham had apparently contemplated a reform of the rates but Elizabeth postponed this step "untill tyme of more peacible trade."[3] The next alteration of valuations was made in the Books of Rates of 1604[4] and 1610.[5] When compared with the official prices of 1558, those of 1610 show an average increase of about 100 per cent.

As is indicated by this statement in regard to the

[1] See, for example, the accounts of Sandwich and Lynn. R. O., K. R. Customs, 130/1 (Sandwich, 4–5 Henry VIII); ibid., 95/5 (Lynn, 9–10 Henry VIII); ibid., 130–134 (Sandwich, 11–12 Henry VIII); ibid., 130–137 (Sandwich, 23–24 Henry VIII).

[2] Br. M., Add., 25097 (wrongly designated as "Table of Customs Duties, temp. Henry VIII"). There are references to an issue of a Book of Rates, 28 May, 4 and 5 Philip and Mary (1558) in Lansd. 3, no. 70.

[3] Br. M., Titus, B IV, fols. 303, 304.

[4] R. O., K. R. Customs, 173/3.

[5] London Customs House. The book is labelled with the date 1611.

changes of prices of commodities listed in the official valuations of the Books of Rates, the Tudor issues of the Books were concerned primarily with the values at which dutiable goods were to be rated, not, as in the nineteenth century,[1] with the specific duties. One exception should be made, in the case of the specific duties on exported cloth, which had been levied by prerogative of the Crown since 1302–03. In 1558 the custom and subsidy on exported cloth were amalgamated and this duty was greatly increased. But while this was the only instance of an avowed specific duty, the system of official valuations on other exports and on imports in effect converted the older *ad valorem* duties to a specific basis. For example, wax exported by denizens had been subject to a duty of 12*d.* per £, or a 5 per cent *ad valorem* duty, reckoning the value at the time and place of exportation. Henceforth, according to the earliest Book of Rates, a hundred pounds of wax were to be valued at 40*s.*, making the duty equivalent to a specific rate of 2*s.* per hundred pounds.[2]

The first Book of Rates did not include all articles subject to an *ad valorem* duty. The scope was widened in later issues. Late in Elizabeth's reign, eighteen dutiable articles were outside the Book of Rates,[3] and in 1604, some goods, such as diamonds and other jewels, were declared unsuitable for such valuation.[4] In 1685, when goods were not rated, the merchant was called upon to take the "Oath *ad valorem*," [5] as indeed

[1] This was the case with The Customs' Book of Rates published in 1842.

[2] The only early Book of Rates, hitherto at all well known, that of 1660 (Statutes, 12 Car. II, c. 4), unlike the Tudor Books, did not make all its valuations wholly independent of the fluctuating prices of the moment.

[3] R. O., K. R. Customs, 196/7.

[4] Ibid., 173/3.

[5] MS. "Books of Instruction, Stockton, 1675–1714," in Stockton Customs House.

was the case in 1787, if there were any goods not included among the specific rates.[1]

It is necessary to differentiate the history of the valuation of articles of export and import from the history of the Book of Rates. Long before any Book was issued, a customary rating had been developed, as is seen in the case of cloth, the most important single article of export in the sixteenth century. Even in the fourteenth and fifteenth centuries, the short white cloth, the cloth of assize, was regularly valued at 40*s*.[2] And this rate held till 1558,[3] when the specific cloth dues supplanted the earlier duties. Cloth was probably an extreme case, but it nevertheless illustrates the general tendency toward a nominal valuation, below the market price.

An interesting feature of the cloth duties was the equating of the numerous varieties of cloth to the standard white cloth. Thus a piece of Bridgewater paid custom as half a short white cloth, or a Tavistock as one sixth. This had been the practice at an earlier date,[4] and it was apparently made general in 1536.[5]

In addition to the official valuations of a large number of articles of foreign trade and the specific cloth duties, the Books of Rates contained other matters,

[1] 27 George III, c. 13, § 17.

[2] R. O., K. R. Customs, 59/8 (5 Ric. II).

[3] Cf. Br. M., Lansd., 3, no. 70; Galba, C I, fol. 223 (about 1558); Bodleian, Douce C 70.

Woad also had enjoyed (at London) a customary rating or valuation of 13*s*. 4*d*. per bale. This, at any rate, was the assertion in 1507 of the Breton merchants who were objecting to new and strange rates. Br. M., Harl., 288, fol. 19.

[4] R. O., K. R. Customs, 96/37 (8 Nov., 1456). A Hanse merchant exported from Lynn "8 straights making 2 cloths custom 2*s*." See also ibid., 53/17 (21–22 Henry VII).

[5] R. O., St. P., Henry VIII, vol. 113, fols. 129–140: "Concernyng the makyng of wollen cloths and how many of every sort shalbe alouyd for a cloth." A fuller statement is to be found in the Book of Rates of 1583 (Bodleian, Douce C 70). See also K. R. Customs, 173/3 (1604).

such as tables of weights and measures and other information useful to merchants engaged in the foreign trade as well as to the customs officials. This additional matter became in the Stuart period a more important element. Some of the Books, indeed, were largely given over to general instructions, to commercial statutes,[1] and orders at the time in force.

Various motives may be assigned for the issue of the Books of Rates. The preamble to the Rates of 1507 states no reason for the innovation. The orders of 1536 suggest that price changes may have had influence, since it is asserted that prices were higher "by the one half and more than they were in times past." But a comparison of the valuations of 1536 with those of 1507 reflects no such rise, and there seems to be no considerable difference between the first official valuations of 1507 and the earlier customary valuations.[2] It is probable that the earlier Books of Rates represent, in the main, the desire of the Government for order and national uniformity in the collection of the customs. Coupled with this was, perhaps, the effort to check fraud and collusion between the customs officials and the merchants, so long a subject of complaint.[3]

[1] The first bounty act on corn, for instance, appeared in the Book of Rates of 1675. See my article in this Journal, vol. xxiv, p. 419.

[2] See R. O., K. R. Customs, 79/12.

[3] See, for example, the complaint, under Henry VIII, of the "Necligens & Ignorans of many the kings offecers," and "the gret suttyll & crafty ynvencions as well of the merchaunts of this Realme as of merchaunt strangers." (R. O., St. P., Henry VIII, vol. 113, fols. 129 ff.) "Item the stelyng of Custome of Silkes by certayne straungers yn exceedyng mesure wherfore ther must be devises establisshed for the king to be answered of the true custome." (Br. M., Titus, B I, 148b. (1535).)

Cunningham emphasises the frauds on the customs revenue in his account of Mary's Book of Rates (Growth, I, 549). Of interest in this connection is the advice to English merchants in an Elizabethan tract on trade, written probably by a West Country merchant: "you must take hede that you gree with the customers for your custome before you land your wares for they will gree with you for two in the hundert otherwyse they will make you paye VIII or X in the hondert." (R. O., St. P., Dom., Eliz., vol. 225, no. 56 (1595 ?).)

The second group of the Books of Rates, beginning with that of 1558, has been explained by Gilbert and Dowell as due to the loss of the Calais duties and the necessity of obtaining compensation by an increase in revenue from the port duties in England.[1] It is true that Queen Mary's Book of Rates was probably issued a few months after the fall of Calais, but that the new rates were to compensate any loss of revenue from the Calais customs is highly unlikely. There was no additional revenue from duties levied at Calais. Staple commodities paid a custom and subsidy when exported from England to Calais and none when exported from Calais,[2] and the local tolls and minor charges at Calais were insufficient to meet the expenses of maintaining this military outpost. When the place fell there was no fiscal loss, but on the contrary a relief from the constant drain of Calais deficits.[3] It is improbable, furthermore, that the Staplers, in their petition of 1560,[4] were correct in holding that the reduction in wool exports was due to the termination of the staple at Calais. The wool trade had, in fact, commenced to decline before Calais was lost to England since it was being displaced by the growing manufacture and exportation of domestic cloth, and this change was recognized in the readjustment of rates in 1558.

It is not necessary to have recourse to such a *post hoc propter hoc* argument as the fall of Calais to explain the new departure in customs policy marked by Mary's Book of Rates. The documents themselves indicate

[1] Gilbert, Treatise, 225; Dowell, I, 179. *Cf.* Cunningham, Growth, I, 550.

[2] R. O., K. R. Customs, 166/8; L. T. R., Foreign Accts., 1 Ric. III, no. 17; Br. M., Add., 30198, fol. 38.

[3] For the year 4–5 Ed. VI, the ordinary expenses of Calais were £9873, 4*s*., 1*d*., the income from all sources £4586, 12*s*., 7½*d*., the deficit £5286, 11*s*., 6½*d*. (Br. M., Add., 30198, fols. 38, 39. *Cf.* also A. Jenckes, The Staple in England, 19.)

[4] R. O., St. P., Dom. Eliz., vol. 15, no. 61.

the causes for the change. The arrangement of the previous Books was bad,[1] and they omitted some articles of trade which in a later period were included, such as corn of all kinds,[2] haberdashery, and upholstery wares.[3] The great rise in prices necessitated, furthermore, an increase in valuations.[4] But most urgent was the need of raising a greater revenue from indirect taxation,[5] when Governmental expenditure was growing and any great addition to direct taxation would have been difficult and dangerous. The Book of Rates of 1558 was issued at a crisis in financial affairs, and Mary's Council introduced a new stage in the history of the customs revenue when they established the difference between valuations "by agreement" and

[1] See the prefaces to the editions of 1583 and 1590 (Bodleian, Douce C 70; and Br. M., C. 40 b 29).

[2] See the books of 1545, 1558, and 1583.

[3] Br. M., Add., 30198, fol. 43 (6 Ed. VI).

[4] This is emphatically stated by the royal commissioners of 6 Ed. VI, who give a list of valuations together with their market price, as follows: —

Articles	Book of Rates Valuation.			Market Price.		
Canvas of Normandy, per C.	*£1	10s.	0d.	£3	0s.	0d.
Cloth, Holland, per piece	0	12	0	1	6	0
Fustian, per bale	*10	0	0	25	0	0
Iron, per ton	*2	0	0	26	0	0
Madder, per bale	*2	10	0	6	0	0
Oil, per ton	*4	0	0	30	0	0
Sarcenet of Florence	*3	0	0	8	0	0 *or*
				9	0	0
Say, per piece	0	10	0	1	5	0
Silks, per yard	0	7	6	1	0	0
Thread, outenall, per dosen	*0	5	0	0	16	0
Velvets, out of grain, per yard	0	7	6	1	0	0
Wainscott, per C.	2	0	0	8	0	0
Worsted, Russell, the broad	0	10	0	1	10	0
Worsted, Russell, the narrow	0	6	8	1	0	0
Total	27	18	8	113	17	0

* The valuations of 1507.

[5] Br. M., Add., 30198, fol. 43 (6 Ed. VI). It is "meet" to take measures for "the profitt of this Custom" . . . additional returns from new rates "were very necessary."

valuations "altered" according to the pleasure or necessities of the Crown.[1] It was the importance of the change thus made which at a later date probably led even high officials to regard this as the first Book of Rates.

The Book of Rates, at first issued as a measure of official reform and national uniformity, became not only a fiscal institution, yielding a large additional revenue by an increase in the valuation of goods,[2] but the agency through which was later developed the policy of protection to English industries.[3]

N. S. B. GRAS.

[1] Br. M., Titus, B IV, fol. 129.

[2] The increase in revenue was £20,000 yearly (ibid., fols. 303, 304).

[3] The preface to the Book of Rates of 1611 is one of the most important early official statements of mercantilist policy. (London Custom House, The Rates of Merchandizes, 8 Jac. I.)

REVIEWS

DYER AND MARTIN'S LIFE OF EDISON[1]

THIS book deserves the attention of economists, not only because it throws light on important phases of the economic history of our time, but because, being largely an autobiography, it may contribute to an understanding of the psychology of the inventor and business leader. True, the book is not from Mr. Edison's pen; but it has been written with his aid, and bears a formal statement that it is published with his consent. The authors have been intimately associated with Mr. Edison, and one of them (Mr. Dyer) is now counsel for the Edison Laboratory. The preface states that "a great deal of the narrative is given in Mr. Edison's own language, from oral or written statements made in reply to questions addressed to him."

Mr. Edison has been much more than an inventor. He has been almost through the whole of his career an organizer, manager, investor. He has taken an active part in developing the most important of his devices, such as the incandescent light in its early stages and up to its utilization on a commercial basis, the sound-reproducing instruments, the moving-picture devices, the cement plant, the unsuccessful iron-ore plant. Not all of the enterprises in which he has taken an active part rest so exclusively on his own devices as the incandescent light and the talking instruments. But in all of these his genius has been applied with the same revolutionary effect, and in all he has himself taken hold not only as inventor but as manager.

None the less, one of the first things that impress the reader is that Mr. Edison does not possess, certainly not

[1] Edison, His Life and Inventions. By F. L. Dyer and T. C. Martin. New York. Harper. 1910. Two vols., pp. 989. $6.00.

in the best combination, the qualities that make the ideal organizer of industry. He has drive, the energy of a titan, an unfaltering persistence, a capacity for enlisting the enthusiasm of his followers; daring, too, and willingness to assume the risks of novel enterprises. But he is not an intuitive calculator, not an adept in financial management nor quick in financial reckoning. In his early days, when the first large lump payment for a successful device was made to him, he thought he might get for it $3000, possibly $5000; his breath was taken away when he was offered $40,000. And tho he was then already in business on his own account as electrical engineer and contractor, and indeed had dabbled in undertakings of his own from boyhood, he received from this transaction his first check, and knew so little of business ways that the drawer of the check and the bank teller were able to amuse themselves by paying over to him piles of small bills which he carried home and guarded all night. The next morning the joke was carried no further; the victim was told how to deposit his check and open a bank account (I, 133). At a period considerably later he received by cable an offer of "30,000" for his interest in an invention; he accepted, but it was not until the draft arrived that he learned that he was to receive not 30,000 dollars, but 30,000 pounds sterling (I, 185). At still another time he was offered $100,000 for an invention, and accepted; but, wishing to be assured of a settled income for a period in the future, stipulated that the sum was to be paid in instalments of $6000 a year spread over 17 years; a mode of payment which was, of course, agreed to with alacrity by the other party. A second offer of $100,000, for another invention, was shortly after accepted on the like stipulation, and with the same ignorance of the pecuniary worth of deferred payments (I, 180, 183). There are abundant other indications through these volumes that book-keeping and accounting were neglected by Mr. Edison and were not readily understood by him. (See, for example, I, 135.) If he prosecuted his enterprises to financial success, it was because his other qualities made that of pecuniary accuracy negligible.

On the other hand, it cannot be said that money has been indifferent to Mr. Edison, or that his energies have been applied without influence from the money-making ambition. His first patent (1869) was for a vote-recorder; its fate is interesting in more ways than one.

> The purpose of this particular device was to permit a vote in the National House of Representatives to be taken in a minute or so, complete lists being furnished of all members voting on the two sides of any question. Mr. Edison, in recalling the circumstances, says: "The invention when completed was taken to Washington. I think it was exhibited before a committee that had something to do with the Capitol. The chairman of the committee, after seeing how quickly and perfectly it worked, said: 'Young man, if there is any invention on earth that we don't want down here, it is this. One of the greatest weapons in the hands of a minority to prevent bad legislation is filibustering on votes, and this instrument would prevent it.'" (Pp. 101–102.)

His biographers remark elsewhere: —

> From the time of boyhood, when he first began to rub against the world, his commercial instincts were alert and predominated in almost all of the enterprises that he set in motion. This characteristic trait had grown stronger as he matured, having received, as it did, fresh impetus and strength from his one lapse in the case of his first patented invention, the vote-recorder. The lesson he then learned was to devote his inventive faculties only to things for which there was a real, genuine demand, and that would subserve the actual necessities of humanity; and it was probably a fortunate circumstance that this lesson was learned at the outset of his career as an inventor. He has never assumed to be a philosopher or "pure scientist." (P. 239.)

It is to be noted, also, that he seems to have been immensely concerned with keeping his intentions secret until he had secured the protection of the Patent Office (I, 273).

Mr. Edison's pecuniary career has been checkered. He made a fortune in connection with the incandescent light, — tho not from the patents, but from connected manufacturing enterprises (II, 661, note). He lost everything in the magnetic iron ore venture, as is noted below; and he became rich again from sundry inventions and enterprises

of later date, — cement-making, talking-machines, moving picture-machines, and so on. I quote again: —

> All his life he has had a great deal to do with finance and commerce, and as one looks at the magnitude of the vast industries he has helped to create, it would not be at all unreasonable to expect him to be among the multi-millionaires. That he is not is due to the absence of certain qualities, the lack of which Edison is himself the first to admit. Those qualities may not be amiable, but great wealth is hardly ever accumulated without them. If he had not been so intent on inventing he would have made more of his great opportunities for getting rich. If this utter detachment from any love of money for its own sake has not already been illustrated in some of the incidents narrated, one or two stories are available to emphasize the point. (P. 661.)

One of the stories adduced relates to a loan requested from the City Bank in New York, and not granted. The president said to Mr. Edison, "What you want is a partner"; a remark which seems to have been taken by Mr. Edison as an intimation of a design to get an illegitimate slice of his gains. Whether or no the remark was sinister, it seems to have had its justification. There is abundant indication that he was an erratic person in business matters; and he may have needed a partner quite as much as Watt needed Boulton.

Mr. Edison's iron-ore enterprise (narrated in chapter IX) illustrates not only the ups and downs of his pecuniary career, but the spirit in which he took hold of his ventures. He conceived the idea that the vast deposits of low grade magnetic iron-ore in the Eastern region could be profitably utilized in competition with the Lake Superior ores. He bought in New Jersey a large tract of land — "a mountain of rock containing only one-fifth to one-fourth magnetic iron" — and proceeded to tear down the mountain, grind the rock to powder, and extract the iron. The venture was conducted with extraordinary energy. A village was created at the site, crushing machinery of novel type invented, a magnetic separator devised, elaborate apparatus installed for putting up the ore in briquets suitable for

transportation and smelting. Doubtless, there is no reason for discounting what is said in these pages about the inventive and organizing genius shown. But a commercial failure the enterprise did prove. Possibly the explanation lies, as the biographers state, in the unexpected cheapness of the competing Lake Superior ores; and it may be that in the future the Eastern ores will again be utilized on Mr. Edison's plans. But the fact remains that in this case the inventor was his own backer, embarked his entire fortune, and lost everything.

None the less, the spirit in which this very enterprise was pushed, and the failure finally accepted, shows that money-making was not the only thing that stirred the man. He lost in the venture the fortune of a couple of millions which he had made from the electrical ventures afterwards consolidated in the General Electric Company. He was immensely interested in the technical problems of the ore plant. A conversation relating to this phase of his career is reported thus: —

> We got a New York newspaper, and I called his attention to the quotation of that day on General Electric. Mr. Edison then asked: "If I had n't sold any of mine, what would it be worth to-day?" and after some figuring I replied: "Over four million dollars." When Mr. Edison is thinking seriously over a problem he is in the habit of pulling his right eyebrow, which he did now for fifteen or twenty seconds. Then his face lighted up, and he said: "Well, it 's all gone, but we had a hell of a good time spending it."

On the psychological issue, the verdict on the whole seems to be, not proven. Obviously the man is veritably possessed by an instinct of workmanship or continuance; just as others are possessed by the instinct of rhythm, or of combat, or of the curiosity of science. It is clear that the love of distinction and the more material self-regarding motives have also moved him. What has been the share of the two sets of motive forces in bringing him to his achievements seems impossible to say. Doubtless he could not say himself. The psychologists are able to do no more for

us than enumerate and classify, with more or less uncertainty, the human instincts. They can assure us only that the love of wealth is no simple thing, but very complex; and that man is moved in his industrial efforts by a variety of impulses, some of them agglomerated in this composite love of wealth, some of them quite distinct from it. We are so immersed in the present individualist system that we can hardly conceive how we should act under conditions totally different. Prediction might be expected to be easier as regards those rare persons, like Mr. Edison, in whom some particular bent appears with extraordinary strength. Yet even here we cannot be sure. What sort of things would he have worked at in a collectivist society, and would his services have been greater or less? To these questions we can give no convincing answers.

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NOTES AND MEMORANDA

THE POSSIBILITY OF CERTAIN GAINS FROM PROTECTIVE DUTIES

In his recently published *Principles of Economics*,[1] Professor Taussig develops a quasi-hypothetical case (having, however, possible relevance to the conditions of the United States) in which he contends that the disadvantages of protection may, to some extent, be offset by an increased purchasing power over foreign, as distinguished from domestic, commodities. The first influence of even a purely revenue duty, and still more of a protective duty, being, as he points out, to lessen imports, the movement of specie will be into the country. Prices and incomes rise in the country, and fall in foreign countries. Exports are checked, imports stimulated. "If the commodities exported from a country are of a sort insistently demanded in foreign countries; and if, on the other hand, the commodities which it imports are not such as to be consumed more largely as their prices fall, — then the change (in money income and prices) may be considerable. Eventually equilibrium is re-established; exports diminish and imports increase until payments again balance. When this stage is finally reached, the country which imposed the duties will have higher incomes and higher prices. The higher incomes will be no benefit so far as domestic purchases go, since within the country prices have risen in the same proportion. But they will be of advantage in the purchase of things imported."

The result is, he thinks, that there will be a balance of gain and loss. The consumers lose as purchasers of the protected articles, but they gain as purchasers of things

[1] Book IV, chap. xxxvii, sec. 1.

that continue to be imported. It is true that of these some are subject to the protective duty; but the consumers gain if the price is not raised by the full extent of the duty, and, even if it is, there is "a full recompense" in the revenue received by the public treasury, and by the consumer being relieved (presumably) from other taxes. The consumers gain, also, on all non-dutiable foreign imports which still continue to come in.

This reasoning Professor Taussig proceeds to apply to the case of the United States, as to which he comes to the final conclusion that it is impossible to calculate "how far the gain from this source has served to offset the loss from the domestic commodities produced and sold at higher cost." "It is a gain," he rightly says, "little reckoned with in the popular controversy."

It may be added, that it is a gain — so far as the present writer is aware — not much reckoned with, even by economists, in the case of *protective* duties, tho a similar doctrine, as will afterwards be pointed out, was held by Mill to be applicable to duties that were imposed for revenue purposes and had no protective effect. The present writer ventures, with great diffidence, to submit, for reasons now about to be set forth, that as applied to high protective duties which are really effective the whole argument is unsound.

It is not clear, in the first place, how the inflow of specie mentioned in the text can result in a *permanent* rise of incomes and prices, except under conditions which would deprive the rise of real significance. It will, of course, cause a temporary rise, while the balance of imports and exports is being adjusted. After the so-called equilibrium has been reached, the advantage of the higher incomes "in the purchase of things imported" can only be realized at the expense of an increased outflow of specie which will tend to reduce prices and incomes in the protected country. If this increased outflow is precluded by the hypothetical conditions of international demand, then all that has happened is that there has been a redistribution of the enlarged income, by which the consumer gets the same (or, more

probably, a less) amount of domestic and foreign commodities as before, paying considerably more for the former, and somewhat less for the latter.[1] It is not evident in what his advantage consists. It is no benefit that foreign commodities are cheaper if he cannot purchase more of them than formerly except on the old terms.

The argument may, perhaps, be more readily understood if it is pointed out that the word "equilibrium" is ambiguous. It may mean either an equilibrium of quantities, or of rates. In the former case, a stationary condition of trade is implied; x imports would exchange for y exports, neither more nor less. In the latter case imports would exchange for exports *at the rate of* x imports for y exports, which might be satisfied by $2x$ for $2y$ or $3x$ for $3y$ and so on. The latter is the sense which, it would seem at first sight, was the one intended. It is against this view that the foregoing criticism is aimed. The contention is that the possibility of exchanging x imports for y exports depends on a certain distribution of specie, and that any attempt to increase the volume of the trade and the advantage in the same ratio would fail because it would disturb this distribution. A nation, for instance, which, under a system of free exchange, had an import of 1,000,000 tons and an export of the same amount, might after adopting a protective tariff get 800,000 tons of imports for 600,000 tons of exports. But it would not be possible for the trade to expand in this ratio so that 1,600,000 tons, say, were obtained for 1,200,000 or even the original 1,000,000 tons of imports for 750,000 tons of exports.

The foregoing arguments apply to all foreign commodities, taxed and untaxed. In regard to imported commodities subject to the protective duty, if the price has been raised to the full extent of the duty, the advantage vanishes altogether. The suggestion that the consumer gets a "full recompense" in the relief from other taxation overlooks

[1] "Considerably more," because the fund available for domestic purchases created by the inflow of specie is still further augmented by the savings in the reduced price of the foreign goods.

the fact that the duties are levied for purposes of protection, and would not have been imposed had a protective policy not been decided upon. The case of a purely revenue tax is, in this connection, unimportant.

If, on the other hand, the rise in price is not to the full extent of the duty, it is because equilibrium has been established at a point short of this result. The supposed advantage has not *pro tanto* been availed of. A further demand for imported articles, if the hypothetical conditions of reciprocal demand would permit of it, could only result in tending to raise their price to the full level of the duty, when the advantage of the higher incomes in the purchase of foreign commodities will be no greater than in the purchase of domestic.

So far the reasoning has proceeded strictly on the lines laid down by Professor Taussig. There is, however, another and simpler way of approaching the subject which has the advantage of disentangling the controversy from intricate questions as to flow of specie and rise of prices. That is, to regard all such matters as mere mechanism and to look only to the broad fact that foreign trade is in its essence a case of barter, the profits of which arise from the extra product created by international division of labor. Regarded in this light Professor Taussig's obvious meaning is that in the adjustment of the equilibrium the lion's share of the advantage derived from mutual trade will fall to the protected country; it will get a larger share in the extra product created by the international division of labor, its imports will be obtained with a smaller volume of exports, foreign and domestic prices being automatically adjusted at the equilibrium point so that this result is secured. Even, however, under a regime of free exchange the assumed conditions secure the lion's share of the extra product to the country having the least insistent demand for imports, and for whose exports there is the most urgent demand abroad. It does not, necessarily, or indeed probably, follow, that protection will increase this advantage. It may increase *the share* in the extra product falling to the protected country,

but it will certainly diminish *the total to be divided*. If, for example, the increased annual product derivable from international trade under conditions of free exchange were some 50,000 tons, say, of iron or steel, and under protection only 30,000, then if the protected country got $\frac{3}{5}$ths of the amount in the former case, and $\frac{2}{3}$ths in the latter, it would make a less gain by 6,000 tons, and the loss would be a continuing one as long as the conditions lasted.

Even if it secured the whole extra product, and not merely $\frac{2}{3}$ths of it, the protected country would make no profit, and would only just avoid a positive loss. The more effective the protection, the less will be the extra product, and the smaller will be the possible gains to be made by an increased share of it. A real gain is in general only conceivable where the product suffers a comparatively trifling diminution, *i. e.*, the duties imposed do not protect, or protect only to a slight extent. They are then hardly distinguishable from revenue duties, and we come back substantially to the position taken up by Mill (*Principles*, Book V, chap. iv, § 6). Mill, it will be remembered, draws a sharp distinction in this respect between revenue and protective duties, holding that the former may give rise to a gain in the conditions of international exchange, which will not be the case if the duties are of a protective character. This view would seem to be substantially correct, tho somewhat too narrowly expressed. Duties only slightly protective, which resulted in but an insignificant diminution of the product, would give practically the same result as duties for revenue only. The same effect might also be produced even with a great diminution of the product if it were accompanied by a very large increase in the proportion in which it was shared (say in the example given above from $\frac{1}{4}$th to $\frac{2}{3}$ths), but this is not likely to occur, save in very exceptional circumstances; the proportion secured by the protected country being by hypothesis great, even in the absence of protection.

Put in a nutshell, the point is that to speak of "offsetting" the losses of protection by "the gain" in the terms of international exchange implies a confusion between two

entirely different things (1) a loss in total amount or volume of produce, (2) a gain in the ratio in which that amount is divided. You cannot set off, *e. g.*, a gain of "$\frac{1}{5}$th" against a loss of "4 tons" until you have reduced the terms to a common denominator by answering the question "$\frac{1}{5}$th of what"? The answer is, in the case of international trade, $\frac{1}{5}$th of the total product or, more precisely, of the extra product resulting from the international division of labor. If the total is *constant* or nearly constant (which is the case of a revenue duty or of a duty but slightly protective), the $\frac{1}{5}$th is a real gain. If the total *diminishes greatly* (the case of high protection when really effective), the nominal gain of $\frac{1}{5}$th is in reality a loss. Two-fifths of ten oranges is four oranges, three-fifths of five oranges is three oranges; a nominal gain of one-fifth, a real loss of one orange.

The application of the foregoing reasoning to the case of the United States is obvious. If the principal condition under which protective duties can favorably influence the terms of international exchange is that they should be very moderate in amount, there would appear to be no possibility of any gain having resulted to the States from this source — provided of course that the protection has been effective. If for any reason it failed to protect, other considerations would arise.

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WAGES AND ABILITY

The subject of wages and ability has been a fertile one for speculation since the economists of the marginal productivity school have advanced the proposition that wage-earners tend to get what they produce. This theory has as a natural corollary that the more efficient will get more than the less efficient: the man of greater ability will receive a greater reward than the man with less ability. But few

attempts have been made to verify the proposition by any but theoretical methods.

As a radical departure from a theoretical to a statistical demonstration, Professor H. L. Moore, in his volume dealing with the laws of wages from a statistical standpoint,[1] devotes a chapter to the problem: "Are wages paid according to ability?" The question is important from the point of view of the application of statistical methods to economic doctrines, and also with reference to its bearing on the contentions of the socialists that labor is exploited. It is therefore of the greatest moment to make certain that any attempted proof of an affirmative answer is thoro and cogent.

Professor Moore's proof is as follows. He accepts the generalization of Galton and Pearson that ability is distributed in the general population according to the normal or probability curve. Then, applying the limitation of the wage-theory that different non-competing groups are to be considered, and assuming for the sake of simplicity that there are but two, — the skilled and the unskilled, — he divides the wage-earners equally between the two groups, the first fifty per cent unskilled and the second fifty per cent skilled. It will readily be seen that the wages might be paid according to ability within each group without fixing in any way the respective shares of the total wage dividend that each group would receive. But he finds that the first fifty per cent of the wage-earners in France get 39.819% of the total wage dividend; and Professor Moore sets himself the following problem: if wages are paid according to ability in each group with the lower group receiving 39% of the total wages, what kind of a curve of distribution of wages will result, and will this ability-wage curve be at all comparable to the actual curve of distribution according to the French statistics?

Professor Moore first simplifies the problem from the mathematical standpoint by taking a "standard population" of 100, so chosen that the distribution of wages in this stand-

[1] Laws of Wages, an Essay in Statistical Economics. New York, 1911.

ard population will correspond in every way with the distribution in a larger population; the advantage being that he can impose on this standard population any conditions he chooses and have a common basis of numbers on which to compare the resulting curves. Then he divides this "standard population" into two equal parts, one, unskilled, earning 39% of the total wage with a minimum wage of 2.36 francs, and the other, skilled, earning 61% of the total, with a maximum wage of 10.18 francs.

According to the differential theory of wages, wages in each group will consist of two parts: first, the minimum wage of the group, and second, a differential based on the difference of ability of each man over the lowest man in the group. In the given standard population, each man in the lower group earns the 2.36 francs minimum plus an amount which corresponds to his part of the remainder of the 39% due to his position on the scale of ability. Each man in the upper group will likewise receive the minimum wage in the group plus a differential corresponding to his advantage in ability over the lowest man in his group; but the minimum wage in this group just exceeds the maximum wage in the first group; that is, is equal to the wage of the fifty-first man. How is the amount of the differential determined? Here Galton's generalization comes in. It is determined by the difference of ability of each man over the least able in the group, which is easily found by mathematical processes from the equation of the probability curve according to which ability is distributed.

By these processes Professor Moore finds the distribution of wages on the basis of ability; that is, he finds what the curve of the distribution of wages would be if wages were paid according to ability. This curve he compares with the actual distribution of wages in France, and finds that the two curves agree closely, and he therefore concludes that wages in this case *are* distributed on the basis of ability. "The fact that the smooth curve of the actual data is practically congruent with the smooth curve of the standard population shows that in this case a doctrine of pure economics is statistically verified."

Is this conclusion valid? Does the fact that the two curves are "congruent" show "that the doctrine of pure economics is statistically verified"? To put a simpler case. Suppose that there were but one group, and it was found that the mathematical computation of the wages that would be paid on the basis of ability and the actual distribution of wages gave curves that coincided, — would the fact of the congruence of the curves prove the point at issue? The computation according to the theory that ability is distributed according to the probability curve will in this case give simply a probability curve. And it is a proved fact, which Professor Moore himself cites, that height, weight, strength, lung capacity, any characteristic almost of the human species, — all are distributed according to the probability curve. These curves are as congruent with the curve of actual wages as is the curve of ability! With the same reasoning as that which Professor Moore uses, wages are paid according to height, weight, strength, and what-you-will, if the congruence of the curves has any significance. The mere fact of congruence proves nothing. The only way to prove that there is a correlation between ability and high wages, is to show that low ability corresponds with low wages, and high ability, with high wages. The fact that ability, strength, and wages have coincident curves of distribution proves nothing as to their connection.

Professor Moore's analysis of the problem is not quite so simple. Does the fact that he has divided his population into two groups and then computed his curve make any real difference with the validity of his reasoning as to the correlation proved by the congruence of the curves? Clearly not. It does make a difference with the character of the theoretical curve, for he has incorporated into it the actual distribution of wages as far as the total received by each half is concerned; and his argument seems to receive an appearance of validity from the fact that it is obvious that the unskilled or lower half are really less able than the upper half, and from the fact that the lower half do not get on the average as much as the skilled men. But the fact

that the unskilled receive less than the skilled is in the original statistics of the French Report, and can be deduced without any recourse to higher mathematics. Professor Moore's curves prove nothing. Since the fact that the unskilled receive less than the skilled is incorporated into the theoretical curve, it does illustrate that fact; but the congruence of the theoretical and the actual curves of wages proves nothing. No data are given that can be applied to the fundamental proposition whether the lower wages in the lower group are correlated or are not correlated with a lower grade of ability.

Professor Moore finds the minimum in each group, and adds to it a differential proportioned to the difference in ability of each man over the man receiving the lowest wage; that is, "a wage on the basis of ability." What he really obtains is a little different. When he determines the differential which each man in the group will receive — "the differential according to ability" — what he really finds is the differential according to the probability curve according to which ability is distributed. But this is actually the differential which each man would receive over the minimum if it were a simple case of chance, — a wage on the basis of any "chance" distribution. It is true that there is no other way that the differential due to ability can be measured; yet this differential is a measure not merely of difference of ability. The same curve would be used to determine a differential if the hypothesis of distribution of wages on the basis of strength, height, or chance itself (all of which are distributed according to the same normal curve) were the hypothesis to be tested.

Professor Moore's syllogism is really as follows: the actual curve of wage distribution is found to agree with a theoretical curve of wage distribution, when this distribution is made according to the probability curve, *i. e.*, chance. But ability is distributed according to the probability curve. Therefore, so runs Professor Moore's conclusion, wages are distributed according to ability. There is evidently a logical slip in the proof.

While the chapter on wages and ability is thus open to serious criticism, it would, perhaps, be unfair to criticize it without speaking of the high merit of the remainder of the work. Professor Moore has drawn interesting and valid conclusions in the other chapters of the book, — correlations which support theoretical deductions hitherto without statistical foundation. Professor Moore has really made a new departure in economic science. He has introduced a movement that will ultimately demand a verification of theory by actual data, which in turn will be a first step toward the concrete application of economic laws to practical ends, based as they will be not on theory alone, but on fact.

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THE PENNSYLVANIA STATE RAILROAD COMMISSION

In the several states of the United States "between 1902 and 1908 over 800 distinct provisions were enacted to regulate purely state traffic, eight new commissions were created, and seven of the thirty-one already in existence were reorganized";[1] leaving only seven states in the union without a public service commission of some kind. One of the eight newly formed commissions was in Pennsylvania, where Governor Stuart signed the creating act on May 31, 1907. Pennsylvanians had felt for some time that the railroads were abusing their powers, and the legislature had attempted a few years before to lessen railroad charges by imposing a flat two-cent passenger rate. When this law was declared unconstitutional, different means of check were found to be necessary. The legislature went into session pledged to create a commission, and the act of 1907 was the result.

[1] G. G. Huebner, in Annals American Academy, July, 1908, p. 138.

Altho almost the entire trend of recent legislation had been to increase and strengthen commission power, Pennsylvania legislators went back to the old Massachusetts form and established a commission with powers merely of investigation and recommendation. It is composed of three commissioners appointed by the governor with the senate's consent, to continue in office for five years and to receive salaries of $8000 a year. These appoint, to serve at their pleasure, an attorney, a secretary, a marshal, and all experts needed for thoro investigation. They are granted wide scope, their power extending over all corporations transporting freight or passengers by rail or water, over pipe line companies, express, telephone, and telegraph companies. They may inquire into the business and management of common carriers and investigate all matters incident to the performance of their public duties and their compliance with charters and state laws. Any aggrieved person or corporation may file a complaint with the commission, whose business it is to investigate, hold a formal hearing if necessary, and award its decision in the form of a recommendation. Its power of recommendation is extended to rates as well as to management and accommodation. Severe penalties are provided for refusal to show books or to testify. The commission may also make investigation of cases at its own volition, and is required to do so in case of accidents, to determine the cause and to recommend measures preventing a repetition.

As far as powers of investigation and advice go, the commission is all that could be desired. If, however, its recommendation is disobeyed or disregarded, its duty is merely to certify the fact to the Attorney General and Secretary of Internal Affairs, who take action as they see fit. The expectation is, of course, the same as had been entertained for the Massachusetts, Rhode Island, and Connecticut Commissions: public opinion is to force the carriers to submission.

When the Pennsylvania Commission organized in January, 1908, the governor's appointees were Nathaniel Ewing, chairman, and Charles Mann and John Y. Boyd, associates.

The places of the last two have since been taken by Milton J. Brecht and S. W. Pennypacker. Mr. Ewing has been a member of the bar for forty-one years and was made President of the Pennsylvania Bar Association in 1903. He has been counsel for various corporations, among them the Pennsylvania Railroad Company, and has been a Director of the West Virginia and Pennsylvania Telegraph and Telephone Company. Thus he has obtained his knowledge of common carriers at first hand. Milton Brecht was formerly superintendent of schools in Lancaster County. Mr. Pennypacker is ex-governor of the state.

The new commissioners discovered 1440 corporations under their jurisdiction and doing active work as public service corporations. They began at once to receive complaints dealing with sanitary conditions, overcharges, poor station facilities, insufficient service, and discrimination. A great number of these cases were promptly settled by correspondence, and of the others demanding more formal hearings and recommendations all have been settled except two, in which the recommendations have been disobeyed by the carriers.

Among the greater things that they have investigated and reported upon are forest fires and their prevention; the canal abandonment in Pennsylvania and its results; telephone and telegraph rates; the Pittsburg and Philadelphia electric service (resulting in both cases in marked improvement according to recommendations); and regulations of boiler construction and inspection (minimizing railroad accidents resulting from defective boilers). In each of these cases the investigation has been thoro, the recommendations specific, minute, and scientific. Experts were engaged and given full opportunity. The common carriers involved also gave their assistance in each instance and in most cases gladly agreed to the recommended improvements.

All parties are beginning to acknowledge the need and justice of commission regulation. The question is no longer whether a state shall have a commission; it has become a question of whether advisory or mandatory. Is the advisory

commission the best form for Pennsylvania? The Massachusetts Railroad Commission, still mainly advisory, has been generally conceded to be effective. Founded in 1869, it has been in active service for more than forty years and has during that entire time had hardly a serious clash with the railway management. Public opinion has accomplished there all that has been expected of it. But are the conditions of the two states similar? I believe they are not. To begin with, Massachusetts is a smaller state, and the problems are less large than in a state of Pennsylvania's size. The Massachusetts Commission has grown up with the railroads, has been able to see the problems as they have arisen, and the railroads have learned to respect its decisions. The Pennsylvania Commission was formed after the public service corporations had become firmly intrenched, and after the problems had become infinitely complex. The public served in Massachusetts consists in a great measure of stockholders also, and their interests on one side balance those on the other.

The conditions in Pennsylvania are very different. When the bill creating the commission was under discussion in the legislature there were requests for definite restriction of railway action, which were answered by the statement that these laws could better be passed later at the suggestion of the commission. When its first annual report was presented to the governor, the commission asked that the following laws be passed: (1) a law permitting a private railroad to join a public one, to obviate the necessity of incorporating private lines; (2) a law punishing trespassers on the right of way of common carriers; (3) a law compelling carriers to notify the commission of any intention of increasing their capitalization, and providing that such an increase without this notification or against the commission's advice be invalid; (4) a law allowing the commission to recommend safety appliances to be used at all grade crossings of public highways over common carriers. Bills have been drawn up in due form by the commissioner's attorney and the plea for their passage has been repeated in each annual report. They still remain unpassed.

Two recommendations have been disregarded, one by the Pennsylvania and one by the Baltimore and Ohio Railroad Company. There is no compelling reason why others should not be. The commission itself, in the report for 1910, asks for an amendment to the creating law defining the force of a recommendation, and suggests that it be given the force of a court decision. The original bill as introduced into the House contained something of this idea, but it was weakened in subsequent readings. If this request of the commissioners were granted, the commission would immediately lose its purely advisory nature. The body itself realizes that it needs more power.

There seems to have been fear in the legislature that the commission was being granted executive, legislative, and judicial powers all together. But why should not this be so? As the Secretary of the New York Commission writes: "The theory of the public service commission statutes is that certain power of control over public service corporations formerly vested in the legislature is delegated by the legislature to the commission to be administered in accordance with certain very general rules established by the legislature. The authority of the commission is therefore legislative and administrative in character, and there is no more reason why its work should be of merely an advisory nature than that an act of the legislature or an ordinance of the Board of Health should be in the form of a recommendation to be carried out at the option of the parties affected."

Pennsylvania's experience may prove to be like that of Iowa, where an advisory commission was in existence for ten years. In three years no recommendation was disobeyed; it was successful in many minor ways. "But it failed just where control was most needed. It was powerless to check . . . discrimination."[1] Wisconsin experienced the same difficulty after 1876. "It is needless to say that the railroads were little interfered with in matters which vitally concerned the industrial interests of the state."[2] The original

[1] F. H. Dixon, State Railroad Control, p. 131.

[2] F. H. Dixon, in Political Science Quarterly, vol. 20, p. 684.

New York Commission also found its recommendations frequently disobeyed, and itself asked for power to apply to the courts for writs of mandamus.

What the future will bring remains to be seen. For the present, Pennsylvania has what may be called the old-fashioned type of regulating body. Perhaps it will follow in the end the example of the more progressive states, — among which may be ranked now not only Wisconsin, but the great neighbor and rival, New York, — and establish a commission with more stringent powers.

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Economic Prizes

NINTH YEAR

In order to arouse an interest in the study of topics relating to commerce and industry, and to stimulate those who have a college training to consider the problems of a business career, a committee composed of

Professor J. Laurence Laughlin, University of Chicago, chairman;
Professor J. B. Clark, Columbia University;
Professor Henry C. Adams, University of Michigan;
Horace White, Esq., New York City, and
Professor Edwin F. Gay, Harvard University,

has been enabled, through the generosity of Messrs. Hart, Schaffner & Marx, of Chicago, to offer in 1913 four prizes for the best studies in the economic field.

In addition to the subjects printed below, a list of available subjects proposed in past years can be had on application. Attention is expressly called to the rule that a competitor is not confined to topics proposed in the announcements of this committee; but any other subject chosen must first be approved by it.

1. Is a money trust possible?
2. How far is competition actually crippled today in American industries?
3. A study of various forms of combination.
4. Recent developments of the German Kartel.
5. A study of the industrial effects of the dissolution of the tobacco trust.
6. Methods of forcing employers to accept the demands of labor unions.
7. How far is the theory of trust regulation applicable to labor unions?
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